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**FATORES ASSOCIADOS À TOMADA DE DECISÃO CLÍNICA NO
MANEJO DE DENTES TRATADOS ENDODONTICAMENTE:
COMPARAÇÃO ENTRE ESPECIALISTAS E NÃO-ESPECIALISTAS**

Santa Maria, RS
2021

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Dissertação de Mestrado apresentada ao Curso de Mestrado do Programa de Pós-Graduação em Ciências Odontológicas, Área de Concentração em Odontologia, Ênfase em Endodontia, da Universidade Federal de Santa Maria (UFSM, RS), como requisito parcial à obtenção do título de **Mestre em Ciências Odontológicas**.

Orientadora: Prof^ª. Dr^ª. Renata Dornelles Morgental
Coorientadora: Prof^ª. Dr^ª. Gabriela Salatino Liedke

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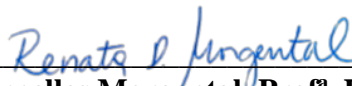
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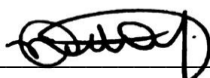


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Aos mestres.

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*Não podiam regressar, porque a picada que iam abrindo
em pouco tempo tornava a fechar com uma vegetação
nova que ia crescendo a olhos vistos.
“Não tem importância”, dizia José Arcádio Buendía.
“O essencial é não perder a orientação”.*

(Gabriel García Marques, Cem anos de solidão)

RESUMO

FATORES ASSOCIADOS À TOMADA DE DECISÃO CLÍNICA NO MANEJO DE DENTES TRATADOS ENDODONTICAMENTE: COMPARAÇÃO ENTRE ESPECIALISTAS E NÃO-ESPECIALISTAS

AUTORA: Isabella Marian Lena

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O objetivo do presente estudo foi avaliar a influência de fatores relacionados ao profissional e ao dente (dados clínicos e radiográficos) e o impacto das características radiográficas, quando avaliadas isoladamente ou em conjunto, em relação à tomada de decisão clínica de especialistas e não-especialistas em Endodontia no manejo de dentes tratados endodonticamente. A amostra foi composta por 28 participantes, sendo 14 endodontistas e 14 cirurgiões-dentistas não-endodontistas. Os participantes avaliaram 30 casos clínicos contendo dentes tratados endodonticamente, em quatro tempos distintos, com intervalos de um mês, por meio de questionários eletrônicos: T1, avaliação de radiografias periapicais digitais editadas (periápice coberto), permitindo apenas a visualização do dente e a classificação da qualidade do tratamento endodôntico (TE); T2, avaliação de radiografias periapicais digitais editadas (dente coberto), permitindo apenas a visualização do periápice e a classificação de seu status; T3, análise das radiografias completas (sem edições); T4, análise das radiografias completas associadas aos dados clínicos do paciente. Em todos os tempos, os participantes avaliaram a qualidade da obturação endodôntica e/ou o status da região periapical e escolheram a melhor opção de tratamento para o dente em questão (não intervir/proservar, retratamento endodôntico, cirurgia parendodôntica, retratamento endodôntico + cirurgia parendodôntica ou exodontia). O nível de confiança no diagnóstico e na definição do tratamento e a necessidade de tomografia computadorizada de feixe cônico (TCFC) para a tomada de decisão clínica também foram avaliados. Um modelo de regressão logística multivariada, tendo como desfecho a escolha do tratamento em T4 (não intervir/intervir) foi empregado para avaliar o impacto das características pessoais dos participantes e dos dados clínicos e radiográficos do dente nos diferentes tempos de avaliação (T1 a T4) na decisão entre reintervir ou não no elemento dentário. Os dados relacionados ao nível de confiança dos participantes foram analisados por testes de Man-Whitney, Friedman e Wilcoxon. Quanto à solicitação de TCFC, os dados foram comparados por testes qui-quadrado, Q de Cochran e McNemar ($\alpha=5\%$). Os resultados demonstram que a presença de sinais e sintomas foi o fator que mais influenciou a decisão de reintervir no elemento dentário (OR: 9.58; IC 95%: 6.24-14.70). Porém, a qualidade da obturação em T4 (OR: 5.34; IC 95%: 3.51-8.12) e o status periapical em T2 (OR: 1.66; IC 95%: 1.07-2.57) e T4 (OR: 4.27; IC 95%: 2.54-7.17) também influenciaram a tomada de decisão clínica. Em relação às características pessoais dos participantes, gênero (feminino) e nível de experiência (com especialização) estiveram estatisticamente relacionados à reintervenção. De um modo geral, profissionais especialistas se sentiram mais confiantes e solicitaram mais frequentemente a TCFC como exame complementar do que os não-especialistas ($P < 0.05$). Concluindo, gênero, nível de experiência, presença de sinais e sintomas clínicos, qualidade do TE (em T4) e status periapical (em T2 e T4) influenciaram o processo de tomada de decisão clínica. Além disso, o nível de confiança no diagnóstico e na definição do tratamento e a requisição de TCFC foram superiores para o grupo dos especialistas em comparação aos não-especialistas.

Palavras-chave: Endodontia. Retratamento. Tomada de Decisão Clínica.

ABSTRACT

FACTORS ASSOCIATED WITH THE DECISION-MAKING PROCESS IN THE MANAGEMENT OF ENDODONTICALLY TREATED TEETH: COMPARISON BETWEEN SPECIALISTS AND NON-SPECIALISTS

AUTHOR: Isabella Marian Lena
ADVISOR: Renata Dornelles Morgental

The present study aimed to evaluate the influence of factors related to the professional and the tooth (clinical and radiographic data) and the impact of radiographic characteristics, when assessed individually or together, on the clinical decision-making process of specialists or non-specialists in endodontics regarding the management of endodontically treated teeth. The sample comprised 28 participants, 14 endodontists and 14 general dentists (non-endodontists). Participants evaluated 30 clinical cases containing endodontically treated teeth, at four different time points, with one-month intervals, by electronic questionnaires: T1, evaluation of edited digital periapical radiographs (the periapex was covered), allowing only the visualization of the tooth and the classification of root filling quality; T2, evaluation of edited digital periapical radiographs (the tooth was covered), allowing only the visualization of the periapical area and the classification of periapical status; T3, analysis of the complete radiograph (without edition); T4, analysis of the complete radiograph, associated with patient's clinical data. At all time points, participants evaluated the root filling quality and/or periapical status, and chose the best treatment option for that tooth: no intervention/wait and see, endodontic retreatment, apical surgery, endodontic retreatment + apical surgery, or extraction. The confidence level to define the diagnosis and the treatment, and the need for cone-beam computed tomography (CBCT) were also evaluated. A Multivariable logistic regression model, having as outcome the treatment option at T4 (wait and see or reintervention), was used to evaluate the impact of participants' personal characteristics, and radiographic and clinical variables of the tooth at the different time points (T1 to T4) in the decision to retreat or not a tooth. Data regarding the confidence level were analyzed by the Man-Whitney, Friedman and Wilcoxon tests. Regarding the request of CBCT, the data were compared with Qui-square, Q Cochran and McNemar tests ($\alpha=5\%$). The results demonstrated that the presence of signs and symptoms was the variable that most impacted the decision to retreat a tooth (OR: 9.58; CI 95%: 6.24-14.70). However, root filling quality at T4 (OR: 5.34; CI 95%: 3.51-8.12) and periapical status at T2 (OR: 1.66; CI 95%: 1.07-2.57) and T4 (OR: 4.27 CI 95%: 2.54-7.17) had also influenced the decision-making process. Regarding participants' personal characteristics, gender (female) and experience level (endodontists) were significantly related to reintervention. In general, clinicians with special training in endodontics were more confident and requested more CBCT as a complementary exam ($P<0.05$) than non-specialists. In conclusion, gender, experience level, clinical signs and symptoms, root filling quality (T4) and periapical status (T2 and T4) influenced the decision-making process. Also, the confidence level in diagnosis and treatment options and the request of CBCT were higher in the specialist group compared to non-specialists.

Key-words: Endodontics. Retreatment. Clinical Decision-Making.

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1 INTRODUÇÃO

“Periodontite apical” (PA) é um termo genérico utilizado para descrever o processo inflamatório periapical que ocorre em resposta à presença de microrganismos e outros agentes irritantes no interior do sistema de canais radiculares de um dente (ABBOTT, 2004). O principal objetivo do tratamento endodôntico (TE) é a prevenção ou cura da PA (FRIEDMAN; MOR, 2004). Embora as taxas de sucesso relatadas na literatura sejam elevadas, entre 75,5% e 98% (ALLEY et al., 2004; TORABINEJAD et al., 2005), uma recente revisão sistemática com metanálise avaliou a prevalência global de PA e demonstrou que 39% dos dentes tratados endodônticamente apresentavam algum tipo de radiolucidez periapical (TIBÚRCIO-MACHADO et al., 2021). Ainda que não seja possível afirmar que toda área radiolúcida periapical represente um processo ativo de doença (KRUSE et al., 2019; NAIR, 2006; TIBÚRCIO-MACHADO et al., 2021), o manejo de dentes tratados endodônticamente e com indícios de falha terapêutica é uma realidade na prática odontológica (LEE et al., 2012).

A presença de sintomatologia dolorosa ou fístula ao longo dos períodos de preservação (DAHLKEMPER et al., 2016; MARQUIS et al., 2006; ZHANG et al., 2015), assim como a existência de PA persistente ou secundária, identificada através de exame radiográfico, são indicativos importantes de um possível fracasso do TE primário e da necessidade de medidas terapêuticas complementares (DAHLKEMPER et al., 2016; EUROPEAN SOCIETY OF ENDODONTOLOGY, 2006). Em tais situações, diferentes opções estão disponíveis, incluindo retratamento endodôntico não-cirúrgico ou cirúrgico e exodontia (KARABUCAK; SETZER, 2007). Com o advento e popularização dos implantes, o dilema entre preservar o elemento dentário ou extraí-lo, realizando uma reabilitação protética, gera grande variabilidade interindividual entre os profissionais envolvidos, o que reforça a necessidade de mais pesquisas sobre o processo de tomada de decisão clínica em Odontologia (DECHOUNIOTIS; PETRIDIS; GEORGOPOULOU, 2010; VOZZA et al., 2013).

Embora essa tomada de decisão esteja geralmente pautada em fundamentos e evidências científicas, o modo como o profissional avalia as informações recebidas tem uma influência determinante no tratamento que será realizado (AL-ALI et al., 2005). Fatores como filosofias educacionais, nível de formação profissional, experiência clínica, valores pessoais, desejos e motivação do paciente e os recursos econômicos disponíveis podem interferir no plano de tratamento e têm sido discutidos na literatura (AZARPAZHOOH et al., 2014; BALTO; AL-MADI, 2004; ÇIÇEK et al., 2016; DAHLKEMPER et al., 2016; DECHOUNIOTIS; PETRIDIS; GEORGOPOULOU, 2010; MCCAUL; MCHUGH; SAUNDERS, 2001; REIT;

GRÖNDAHL, 1983, 1988; PAGONIS; FONG; HASSELGREN, 2000; WENTELER; SATHORN; PARASHOS, 2015). Estudos prévios sugerem que clínicos com formação específica em Endodontia tendem a preferir opções de tratamento mais conservadoras, como o retratamento endodôntico não-cirúrgico, em detrimento de outras alternativas terapêuticas (DECHOUNIOTIS; PETRIDIS; GEORGOPOULOU, 2010; NAGI; KHAN; RAHMAN, 2017; PAGONIS; FONG; HASSELGREN, 2000; WENTELER; SATHORN; PARASHOS, 2015). Além disso, quando endodontistas e clínicos gerais foram comparados em relação à tomada de decisão clínica em dentes tratados endodonticamente e os motivos pelos quais decidiram reintervir, demonstrou-se que os primeiros reportam mais características como a presença de lesão periapical, canais não obturados, cones de prata e ausência de restauração coronária, achados que provavelmente podem ser atribuídos a um conhecimento específico sobre fatores que podem impactar o desfecho do TE (BALTO; AL-MADI, 2004).

A análise radiográfica faz parte do conjunto de recursos semiotécnicos utilizados para inferir o sucesso ou fracasso de um TE e avaliar a necessidade de reintervenção (YL; V; K, 2011). No entanto, estudos anteriores já demonstraram a existência de grande variação intra e interexaminador durante o processo de interpretação radiográfica (BURNS et al., 2018; HÜLSMANN, 1994; MORGENTAL et al., 2012; NAGI; KHAN; RAHMAN, 2017; REIT; HOLLENDER, 1983). Nesse contexto, a qualidade técnica da obturação, o status periapical e as condições restauradoras e protéticas do dente são apontados como fatores que interferem na tomada de decisão clínica (BALTO; AL-MADI, 2004; MORGENTAL et al., 2012; REIT; GRONDAHL; ENGSTRÖM, 1985; TAHA; ALBASHAIREH; ALFIED, 2019). Frente a elementos dentários com presença de pino ou coroa protética, os profissionais tendem a intervir mais tardiamente (lesões periapicais maiores) e geralmente optam por opções mais invasivas como cirurgia parodontal ou exodontia e implante (AL-ALI et al., 2005; NAGI; KHAN; RAHMAN, 2017; WENTELER; SATHORN; PARASHOS, 2015).

O estudo de Wenteler, Sathorn e Parashos (2015) demonstrou que dentes que possuíam obturações com limite apical e densidade inadequados eram mais facilmente indicados para o retratamento endodôntico, independentemente do seu nível de alteração periapical, enquanto que aqueles cuja obturação era considerada adequada eram classificados na opção “não intervir”. A decisão pelo retratamento ou outras modalidades mais invasivas também é influenciada pela presença de lesão periapical e sua extensão. Segundo Al-Ali et al. (2005), quando profissionais recomendam o retratamento para uma lesão periapical de determinado tamanho, eles indicarão a reintervenção em todos os dentes com lesões maiores do que aquela. Entretanto, existe uma significativa variação entre os profissionais em relação à escolha do

limite a partir do qual o retratamento deve ser recomendado (AL-ALI et al., 2005; WENTELER; SATHORN; PARASHOS, 2015).

Afim de compreender o impacto da qualidade radiográfica da obturação e do status periapical no manejo de dentes tratados endodonticamente, Morgental et al. (2012) avaliaram a tomada de decisão clínica de cirurgiões-dentistas quando estes foram apresentados a tais características isoladamente e em momentos distintos. A qualidade da obturação apresentou maior influência na decisão de retratar ou não o dente avaliado do que a condição periapical. Embora na prática clínica essas características radiográficas não sejam avaliadas isoladamente, tal achado foi considerado preocupante pelos autores, pois sugere uma supervalorização de fatores técnicos, em detrimento de fatores biológicos. É importante ressaltar que a imagem radiográfica não permite avaliar os procedimentos de limpeza e desinfecção do sistema de canais radiculares prévios à obturação (KABAK; ABBOTT, 2005), os quais são fundamentais para um TE bem-sucedido (SJÖGREN et al., 1997).

Da mesma forma, a presença de imagem radiolúcida no periápice de um elemento dentário não necessariamente indica a presença de patologia periapical. Um estudo comparando a imagem tomográfica e o diagnóstico histopatológico verificou que 6,8% dos dentes sem TE e 19,7% dos dentes tratados endodonticamente, cujos periápices eram considerados saudáveis na avaliação histopatológica, haviam sido diagnosticados com PA, quando avaliados por tomografia computadorizada de feixe cônico (TCFC) (KRUSE et al., 2019). É importante lembrar que a presença de radiolucidez periapical persistente em dentes com canais obturados pode ser ocasionada pelo processo de reparo da lesão com deposição de tecido cicatricial, ao invés de tecido ósseo, situação conhecida como “cicatriz apical” (NAIR, 2006).

Apesar de sua relevância, a interpretação da radiografia periapical merece atenção e cuidado por se tratar de uma imagem bidimensional de estruturas tridimensionais. Neste contexto, o exame radiográfico periapical nem sempre é preciso na detecção de falhas na obturação endodôntica, assim como na identificação de possíveis fraturas ou acidentes que possam ter acontecido durante o TE primário e que podem comprometer o desfecho da terapia (DAHLKEMPER et al., 2016; ECKERBOM; MAGNUSSON, 1997; HANSRANI, 2015). Dessa forma, quando indicada de modo racional, onde os benefícios superam os riscos, a TCFC pode ser um excelente recurso de imagem para análise de dentes tratados endodonticamente em casos onde a interpretação da radiografia periapical é inconclusiva (FAYAD et al., 2015). Tal informação é reforçada por Rodriguez et al. (2017), que compararam a tomada de decisão clínica de observadores frente à análise de radiografias periapicais e após a análise da TCFC dos mesmos elementos dentários. Em 49,8% dos casos, os participantes mudaram suas opções

de tratamento após a análise da tomografia. Em estudo similar (MOTA DE ALMEIDA; KNUTSSON; FLYGARE, 2014), os observadores relataram que a análise da TCFC foi responsável por aumentar seus níveis de confiança e conseqüentemente modificaram os planos de tratamento.

Além da análise radiográfica da região periapical, o sucesso do tratamento endodôntico também é avaliado a partir de manifestações clínicas (DAHLKEMPER et al., 2016; EUROPEAN SOCIETY OF ENDODONTOLOGY, 2006). A presença de sintomatologia dolorosa em dentes tratados endodonticamente pode ser um indicativo de um processo ativo e agudo de doença (REIT & GRÖNDAHL, 1988). Porém, poucos estudos até o presente momento exploraram o papel das diferentes condições de sinais e sintomas na tomada de decisão clínica no manejo de dentes tratados endodonticamente (HÜLSMANN, 1994; HEINIKAINEN et al., 2002; BALTO; AL-MADI, 2004; ARYANPOUR et al., 2000; ÇIÇEK et al., 2016). Além disso, seus resultados não demonstram um consenso sobre a relevância de tais características.

De acordo com Heinikainen et al. (2002), os observadores pareceram ignorar a presença de sinais e sintomas, uma vez que basearam suas decisões de tratamento nos achados radiográficos dos casos. Entretanto, Aryanpour et al. (2000) e Çiçek et al. (2016) demonstraram que os profissionais tendem a optar por abordagens mais invasivas de tratamento quando os casos clínicos apresentam sinais e sintomas. É importante destacar que, embora as informações clínicas dos casos estejam presentes em alguns estudos que avaliaram o manejo de dentes tratados endodonticamente (PAGONIS; FONG; HASSELGREN, 2000; MCCAUL; MCHUGH; SAUNDERS, 2001; AL-ALI et al., 2005; WENTELER; SATHORN; PARASHOS, 2015; BURNS et al., 2018), as imagens radiográficas estavam sempre acompanhadas da mesma história pregressa, fator que compromete a compreensão da relevância dos dados clínicos na tomada de decisão.

Percebe-se que, embora seja um fato corriqueiro no dia a dia do cirurgião-dentista, a tomada de decisão clínica referente ao manejo de dentes tratados endodonticamente é um processo cognitivo complexo que sofre influência de características particulares do avaliador, bem como do julgamento clínico do caso (AL-ALI et al., 2005; MCCAUL; MCHUGH; SAUNDERS, 2001; NAGI; KHAN; RAHMAN, 2017). Existe uma clara falta de consenso entre dentistas generalistas e especialistas para determinar o diagnóstico endodôntico, bem como do papel e relevância de características clínicas e radiográficas na definição dos rumos do tratamento (BALTO; AL-MADI, 2004; BIGRAS et al., 2008; BURNS et al., 2018; MORGENTAL et al., 2012). Além disso, características particulares do avaliador, como o nível

de formação profissional e o tempo de experiência, têm sido identificadas nesse processo (NAGI; KHAN; RAHMAN, 2017; WENTELER; SATHORN; PARASHOS, 2015), merecendo investigações adicionais afim de esclarecer o impacto de cada uma delas.

Diante do exposto, o presente estudo buscou avaliar a influência de fatores relacionados ao profissional e ao dente (dados clínicos e radiográficos) e o impacto das características radiográficas, quando avaliadas isoladamente ou em conjunto, em relação à tomada de decisão clínica de cirurgiões-dentistas com ou sem especialização em Endodontia no manejo de dentes tratados endodonticamente.

**2 ARTIGO – FACTORS ASSOCIATED WITH THE DECISION-MAKING PROCESS
IN THE MANAGEMENT OF ENDODONTICALLY TREATED TEETH:
COMPARISON BETWEEN SPECIALISTS AND NON-SPECIALISTS**

O presente artigo será submetido ao periódico *International Endodontic Journal* (ISSN: 1365-2591; Fator de impacto: 5.264; Qualis A1). As normas para publicação estão descritas no Anexo A.

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Title: Factors associated with the decision-making process in the management of endodontically treated teeth: comparison between specialists and non-specialists

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Abstract

Aim: This study aimed to evaluate the influence of factors related to the professional and the tooth (clinical and radiographic data) on the clinical decision-making process of specialists or non-specialists in endodontics regarding the management of endodontically treated teeth.

Methodology: The sample comprised 28 participants, 14 endodontists and 14 general dentists (non-endodontists). Participants evaluated 30 clinical cases containing an endodontically treated tooth, at four different time points, with one-month intervals, by electronic questionnaires: T1, the digital periapical radiograph was edited, and the periapex was covered, allowing only the evaluation of root filling quality; T2, analysis of the periapical status (the tooth was covered); T3, complete radiograph analysis (without edition); T4, complete radiograph analysis, associated with patient's clinical data. At all time points, participants evaluated the root filling quality and/or periapical status and the best treatment option for that tooth: wait and see, endodontic retreatment, apical surgery, endodontic retreatment + apical surgery, or extraction. The confidence level to define the diagnosis and treatment and the need for cone-beam computed tomography (CBCT) were also evaluated. Multivariable logistic regression was performed to evaluate the impact of participant's characteristics and radiographic and clinical variables of the tooth in the decision to retreat or not. The differences in the confidence level and the request of CBCT were assessed by non-parametric tests ($\alpha=5\%$).

Results: The presence of signs and symptoms, assessed only in T4, was the variable that most impacted the decision to retreat a tooth (OR: 9.58; CI 95%: 6.24-14.70). Root filling quality in T4 and periapical status in T2 and T4 also influenced the decision-making process. Regarding participants' characteristics, gender (female) and experience level (endodontists) were significantly related to the reintervention. In general, clinicians with special training in endodontics were more confident and requested more CBCT as a complementary exam than non-specialists.

Conclusion: Gender experience level, clinical signs and symptoms, root filling quality (T4) and periapical status (T2 and T4) influenced the decision-making process. Also, the confidence level in diagnosis and treatment options and the request of CBCT were higher in the specialist group compared to non-specialists.

Keywords: decision-making, endodontics, treatment planning.

Introduction

Clinical decision-making is a routine but complex process in the dental practice and should be based on the best evidence available, case-specific judgment, financial resources, and the patient's desires and motivation (Al-Ali *et al.*, 2005; Bigras *et al.*, 2008; American Association of Endodontists, 2017). In endodontics, dentists are often faced with root filled teeth with persistent or recurrent apical periodontitis (AP) associated or not with signs and symptoms (Lee *et al.*, 2012; Tibúrcio-Machado *et al.*, 2021). In these situations, the necessity of reintervention should be considered, and the clinicians have the dilemma of choosing the best treatment option for the case, such as nonsurgical and/or surgical root canal retreatment or tooth extraction and replacement with an implant (Karabucak and Setzer, 2007).

The clinical management of endodontically treated teeth is still controversial and influenced by different factors (Balto & Al-Madi, 2004; Al-Ali *et al.*, 2005; Dechouniotis *et al.*, 2010). The level of speciality training, time of clinical experience, personal values, educational background, and financial resources may impact the treatment plan and have been studied in the literature (Pagonis *et al.*, 2000; McCaul *et al.*, 2001; Balto & Al-Madi, 2004; Dechouniotis *et al.*, 2010; Wenteler *et al.*, 2015; Çiçek *et al.*, 2016). Practitioners with special training in endodontics tend to prefer more conservative treatments, as nonsurgical root canal retreatment, compared to other therapeutic options (Pagonis *et al.*, 2000; Dechouniotis *et al.*, 2010; Wenteler *et al.*, 2015; Nagi *et al.*, 2017). In addition, practitioners with the same level of expertise in endodontics demonstrated much better consensus in the definition of diagnosis and treatment plan in comparison to dental students and other specialists (McCaul *et al.*, 2001).

Periapical radiographs are the main resource to assess root canal treatment success or failure (NG *et al.*, 2011). However, they represent a two-dimensional image obtained from three-dimensional structures, which increases the risk of misinterpretation (Eckerbom & Magnusson, 1997; Hansrani, 2015; Dahlkemper *et al.*, 2016). In situations where the assessment of the periapical area or the root filling quality is imprecise, this could lead the clinicians to misdiagnosis (Morgental *et al.*, 2012). Radiographic interpretation is a subjective process, and past studies have already demonstrated great intra- and inter-examiner variations during the radiographic examination of endodontically treated teeth (Reit & Hollender, 1983; Hülsmann, 1994; Morgental *et al.*, 2012; Nagi *et al.*, 2017; Burns *et al.*, 2018). In a previous study, the radiographic quality of root canal fillings and the periapical status were assessed individually in different moments by general dentists (Morgental *et al.*, 2012). They evaluated edited periapical radiographs that allowed the visualization of only the tooth or only the periapex. The root filling quality was seen to affect the general dentist's decision to prescribe

endodontic retreatment more than the periapical status. In addition, the evaluation of the root canal filling in an unedited radiograph influenced the interpretation of the periapical area condition.

During the assessment of the periapical region, professionals tend to establish a “cut-off point” for the size of the periapical lesion from which they start to perceive that an intervention would be indicated and tend to recommend endodontic retreatment for all teeth with lesions larger than that. However, the definition of this cut-off point varies widely between clinicians (Kvist *et al.*, 1994; Al-Ali *et al.*, 2005). In this context, it is important to note that the presence of radiolucency in the apex of a root filled tooth may not always represent a periapical disease. A previous investigation (Kruse *et al.*, 2019) compared the evaluation of cone-beam computed tomography (CBCT) exams with the histopathological diagnosis and found that 6.8% of non-root filled teeth and 19.7% of root filled teeth that were assessed as diseased in the CBCT images were diagnosed as healthy teeth in the histopathological analysis. The fact that this misdiagnosis happened more in root filled teeth demonstrates professional bias while evaluating the periapical status of endodontically treated teeth.

CBCT is a three-dimensional imaging exam that overcomes some limitations of conventional radiographic techniques (Pettersson *et al.*, 2012). In this sense, when rationally indicated and clinically justified, the CBCT is the imaging modality of choice, especially in cases where the radiographic interpretation is inconclusive during the assessment of endodontically treated teeth (Fayad *et al.*, 2015). Past studies have already demonstrated that the clinicians feel more confident and considerably change their diagnosis and treatment plans after evaluating CBCT images (Mota De Almeida *et al.*, 2014; Mota de Almeida *et al.*, 2015; Rodríguez *et al.*, 2017).

Although it is a common action in the daily routine of dentists, the clinical decision making regarding the management of endodontically treated teeth is a complex cognitive process influenced by individual characteristics and by the clinical case-specific judgment (McCaul *et al.*, 2001; Al-Ali *et al.*, 2005; Nagi *et al.*, 2017). There is a clear lack of consensus between general dentists and specialists in endodontics in the definition of diagnosis, as well as the role and relevance of radiographic variables in the definition of the best treatment option (Balto & Al-Madi, 2004; Bigras *et al.*, 2008; Morgental *et al.*, 2012; Burns *et al.*, 2018). In this context, the present study aimed to evaluate the influence of factors related to the professional and the tooth (clinical and radiographic data) and the impact of radiographic characteristics, assessed individually or together, on the clinical decision-making process of non-specialists and specialists in endodontics, regarding the management of endodontically treated teeth.

Materials and Methods

This study was approved by the Research Ethics Committee of the Federal University of Santa Maria (protocol number 26387819.9.0000.5346), Santa Maria, RS, Brazil. The sample size was based on previous studies (Pagonis *et al.*, 2000; Balto & Al-Madi, 2004; Morgental *et al.*, 2012) and comprised 28 participants: 14 general dentists, non-specialists in endodontics and 14 endodontists.

Sample selection

Electronic questionnaires were sent to randomly selected professionals registered as general dentists or endodontists in Santa Maria, RS, Brazil. The non-specialist group included only clinicians who had not received any postgraduate training, advanced programs or courses in endodontics; the endodontist group included clinicians who had completed specialized training in endodontics.

Participants were randomly selected and contacted by e-mail and/or telephone from a list of professionals provided by the Regional Council of Dentistry. Those who accepted to participate were informed about the aim, methods and risks of the study. An informed consent form was included on the first page of the questionnaires. Invitations stopped when the established sample size number was reached.

Thirty digital periapical radiographs of endodontically treated teeth were carefully selected from the dental records of the university dental clinic. The cases were chosen to represent a wide range of clinical situations with different conditions regarding the technical quality of root canal treatment and periapical status, as well as coronal restoration, prosthetic crown, presence or absence of intracanal post, and/or iatrogenic errors.

The radiographs were edited using the Microsoft PowerPoint version 2016 software (Microsoft Corp., Redmond, WA, EUA) (Fig. 1), according to the methodology proposed by Morgental *et al.* (2012). First, the periapical area of the tooth was covered using the black paintbrush tool, allowing only the visualization of the root canal filling. At a second moment, the tooth was covered using the white paintbrush tool, allowing only the visualization of the periapical area. The brightness and contrast of the images were adjusted to ensure adequate contrast and density for the radiographic evaluation.

Questionnaire assessment and radiographic interpretation

Four questionnaires, delivered to each participant at an interval of at least one month, were structured in a web survey platform (Google Forms – Google LLC, Googleplex, Mountain View, CA, EUA). The interval of thirty days was also adopted by Wanzeler *et al.* (2019), and it was considered a sufficient period of time for the participants forget they previous answers. The participants were instructed to perform the radiographic evaluation in the electronic device (notebook, desktop computer, tablet or smartphone) that seemed more comfortable, but preferably in a controlled lighting environment. Participants' individual data, such as gender, age, experience level (specialized training in endodontics or not), and years of experience, were recorded in the first questionnaire. In the next ones, they informed only their ID card number for posterior matching.

The radiographic interpretation happened in four different time points – at each time, the order of the cases was randomized to prevent participants from remembering the answers in the previous questionnaires. At the first time point (T1) (APÊNDICE A), the participants evaluated the 30 radiographs with the periapical region covered, providing information only about the technical quality of the root canal treatment. At the second time point (T2), the tooth structure was covered, and only the periapical area was available for evaluation. In the third month (T3), the participants had access to the complete radiograph (without edition). Finally, in the fourth and last time point (T4), they re-evaluated the complete radiograph and had access to the clinical data of the case, including medical and dental records and the presence of signs and symptoms. The researchers hypothetically created the clinical data for all cases in order to represent different clinical scenarios. The clinical variables included were: systemic impairment (diabetes, hypertension, chronic kidney disease, HIV infection, presence of heart valve), time since the end of the endodontic treatment, presence of swelling or sinus tract, and presence of pain or sensitivity to palpation or percussion.

For each radiograph, depending on the time point (T1, T2, T3, or T4), participants were supposed to evaluate the root filling quality (adequate or inadequate) and the periapical status (normal periodontal ligament space, widened periodontal ligament space, or periapical lesion). Also, the decision-makers were asked to define the best treatment option for that tooth: wait and see, nonsurgical retreatment, apical surgery, nonsurgical retreatment + apical surgery, or extraction. For each case, the participants had to define their confidence level in the diagnosis (root filling quality and periapical status) and in the treatment option on a scale from 1 to 5 (1, not confident; 5, very confident) as described by Wanzeler *et al.* (2019). Finally, they were asked whether she/he would request a CBCT to help in the decision making of the case.

Statistical analysis

The data were expressed in absolute and relative frequencies. Multivariate logistic regression was performed to evaluate the impact of participants' characteristics and clinical and radiographic variables related to the tooth in the preferred treatment option (wait and see versus reintervention) in the last evaluation (T4). For the logistic regression, variables were categorized as follows: age, ≤ 39 years or >39 years (median was 39 years old); gender, female or male; years of experience, ≤ 16 years or > 16 years (median was 16 years); experience level, non-specialist or endodontist; root filling quality, adequate or inadequate; periapical status, healthy or diseased; CBCT request, yes or no; clinical signs and symptoms, present or absent. Regarding the decision making, since few participants opted for tooth extraction, the answers were dichotomized into: wait and see (observation) or reintervention (including nonsurgical retreatment, apical surgery, nonsurgical retreatment + apical surgery, or extraction). Variables with an initial significance outcome in the binary model ($P < 0.2$) were tested further by entering them one by one into the multivariate logistic regression model, and those that retaining their contribution to the model were entered simultaneously in the multivariate model. In the multivariate analysis, the level of statistical significance was set as $P < 0.05$.

The confidence level in diagnosis and treatment plan between the two groups (non-specialist or endodontist) were compared using the Man-Whitney U test for each evaluation time point (T1 to T4), while the differences within each group were assessed using the Friedman and Wilcoxon tests. The Chi-square test was used to assess the request for CBCT between the two groups; the Q Cochran and McNemar tests were applied to analyse the differences in the same group. Data were analysed using Microsoft Office Excel version 2016 (Microsoft Corp., Redmont, WA, USA) and SPSS version 21.0 (SPSS Inc., Chicago, IL, USA) software.

Results

Table 1 shows the baseline characteristics of the sample. The frequency distribution of treatment choices according to the group of participants (non-specialist or endodontist) at the four evaluation time points is displayed in Table 2. Wait and see (observation) was the preferable treatment option for both groups at all four time points.

Table 3 shows the binary and multivariate logistic regression. From the multivariate model, the variables significantly associated with the indication of reintervention at T4 were: gender (OR: 1.62; CI 95%: 1.07-2.45); experience level (OR: 2.68; CI 95%: 1.76-4.06); periapical status at T2 (OR: 1.66; CI 95%: 1.07-2.57) and T4 (OR: 4.27; CI 95%: 2.54-7.17);

root filling quality at T4 (OR: 5.34; IC 95%: 3.51-8.12) and clinical signs and symptoms (OR: 9.58; IC 95%: 6.24-14.70).

Table 4 presents the influence of the experience level and the study time points (T1 to T4) on the participants' confidence level. Endodontists were significantly more confident in their diagnosis than non-specialists at T4 ($P < 0.05$) and more confident in their treatment plan at T3 and T4 ($P < 0.05$). The highest confidence levels in both diagnosis and treatment plan were obtained in T4, when the participants had access to the unedited periapical radiograph and clinical data.

Regarding the CBCT request, Table 5 shows that endodontists significantly requested CBCT more frequently than non-specialists at T2 and T3. Regarding the influence of the study time points, the non-specialist group solicited CBCT more often at T1. However, there were no significant differences in the CBCT requests among the four study time points within the endodontist group.

Discussion

The clinical management of endodontically treated teeth is based on the success or failure of the initial endodontic treatment. Nonetheless, the criteria used to make the decision of wait and see versus reintervention vary widely among clinicians (Rawski *et al.*, 2003; Al-Ali *et al.*, 2005; Bigras *et al.*, 2008; Wenteler *et al.*, 2015). The present study verified the influence of factors related to the professional and the tooth (clinical and radiographic data) on the decision-making process and the confidence level of specialists and non-specialists in Endodontics when facing an endodontically treated tooth.

This study was performed at four time points, which allowed us to isolate the variables "root filling quality" and "periapical status" to better understand their influence when assessed singly (T1 and T2), together (T3), or associated with clinical signs and symptoms (T4) on the decision-making process. To achieve this objective, a logistic regression analysis was performed. The use of logistic regression is not common in studies about decision making in endodontics. In this approach, it is possible to establish and estimate the relationship between several variables (Domínguez-Almendros *et al.*, 2011). In the present investigation, with the multivariate analysis, it was possible to understand what factors the participants considered more critical while assessing the cases and how each radiographic characteristic (root filling quality and periapical status) impacted the decision-making process.

In the present study, for each case, the participants had five treatment options to choose from. In all four time points of the study, both non-specialists and endodontists opted more

frequently for the treatment options “wait and see” or nonsurgical retreatment, which is in agreement with previous investigations (Pagonis *et al.*, 2000; Balto & Al-Madi, 2004; Taha *et al.*, 2019). It could be possibly explained by the nature of the cases selected herein. In our study, not all cases were symptomatic or had a well defined periapical lesion. This scenario could also explain that the least chosen treatment option was the extraction, representing less than 2% of the responses in each time point. For this reason, in the logistic regression analysis, tooth extraction was included in the “reintervention” option.

The experience level influenced the decision of participants regarding reintervention. Endodontists had higher odds of choosing to retreat/extract a tooth when compared to non-specialists. Endodontic procedures are usually complex and demand specific knowledge and training. Thus, clinicians with specialized practice may be more accurate in radiographic diagnosis (McCaul *et al.*, 2001; Çiçek *et al.*, 2016) and more self-reliant in their endodontic skills (Heinikainen *et al.*, 2002). Therefore, as described in previous studies, endodontists tended to indicate endodontic retreatments more frequently (Reit *et al.*, 1985; McCaul *et al.*, 2001; Balto & Al-Madi, 2004; Taha *et al.*, 2019). This more conservative behaviour of non-specialists may be explained by the lack of specific training of endodontic retreatment approaches in the undergraduate curriculum of dental schools and a lack of knowledge about the success rates of these therapeutic approaches (Balto & Al-Madi, 2004; Taha *et al.*, 2019).

It is well-known that the persistence of apical radiolucency in the follow-up radiographs may represent an endodontic treatment failure and the need for reintervention (NG *et al.*, 2008). AP is an immune system response to the presence of microorganisms within the root canal system (Nair, 2006). The permanency of these irritating agents and their by-products leads to local bone destruction in the periapical area (Del Fabbro *et al.*, 2016). In the present study, when the participants assessed the periapical tissues as diseased (T2 and T4), they had 1.66 and 4.27 times more chances, respectively, to indicate the tooth for a reintervention. This was expected, and it is in agreement with previous studies, which also demonstrated that the observers tend to choose more invasive approaches when facing a diseased periapical area (Reit *et al.*, 1985; Reit & Gröndahl, 1988; Aryanpour *et al.*, 2000; Heinikainen *et al.*, 2002; Balto & Al-Madi, 2004; Nagi *et al.*, 2017).

Regarding the root filling quality, only the assessment performed in T4 was included in the multivariate analysis. During the construction of the multivariate logistic regression model, the assessment of root filling quality in T1 and T3 did not retain their contribution to the model. The participants who assessed the root filling as inadequate were more likely to retreat or extract a tooth (OR: 5.34; IC 95%: 3.51-8.12). These results seem to show that when a poorly filled

root canal is not accompanied by a diseased periapex or signs and symptoms, it may not have as much influence on the decision making process. However, previous studies have already demonstrated that the root filling quality is one of the most critical factors for reintervention to clinicians (Balto & Al-Madi, 2004; Taha *et al.*, 2019). Root fillings assessed as inadequate were more easily indicated for retreatment regardless of the size of AP (Wenteler *et al.*, 2015). It is important to point out that the radiographic appearance of an adequate root canal filling does not provide information about the mechanical and chemical disinfection, which are essential to the outcome of endodontic treatment (Kabak and Abbott, 2005; NG *et al.*, 2011).

The presence of signs and symptoms after root canal treatment is frequent, especially in the first 24 hours, when the prevalence of postoperative pain can reach 40%; however, after seven days, the prevalence of pain usually drops to levels of 10% or less (Pak & White, 2011). In this sense, after the immediate postoperative period, the persistence of signs and symptoms in the follow-up visits is a clear indication for endodontic retreatment (Dahlkemper *et al.*, 2016). Few studies of our knowledge had explored the influence of signs and symptoms in the decision making of endodontically treated teeth (Hülsmann, 1994; Aryanpour *et al.*, 2000; Heinikainen *et al.*, 2002; Balto & Al-Madi, 2004; Çiçek *et al.*, 2016), and their findings are inconsistent. To some authors, the observers tend to ignore the presence of signs and symptoms and base their treatment decisions mostly on radiographic findings (Heinikainen *et al.*, 2002). According to Balto & Al-Madi (2004), general dentists regarded clinical symptoms as more relevant than endodontists. However, in our study, the presence of signs and symptoms was the most relevant factor that significantly increased the odds of a tooth being indicated for reintervention (OR: 9.58; CI 95%: 6.24-14.70). This finding agrees with Aryanpour *et al.* (2000) and Çiçek *et al.* (2016), who also demonstrated that the observers tend to choose more invasive treatment options when faced with the presence of signs and symptoms. Furthermore, the occurrence of symptomatology also seems to influence the perception of the periapical area. At T4, the assessment of the periapex as diseased had a greater impact on the decision to indicate a tooth for a reintervention (OR: 4.27; IC: 2.54-7.17), in comparison to T2 (OR: 1.66; CI 95%: 1.07-2.57) and T3 (OR: 1.22; CI 95%: 0.73-2.03). A possible explanation is that the presence of signs and symptoms indicates the existence of an acute inflammatory process, which could affect the perception of the periapical area as more diseased since, in some cases, the presence of apical radiolucency is not reason enough for a reintervention (Reit & Gröndahl, 1988).

In addition to tooth-related factors, participants' characteristics may influence treatment decisions (Reit *et al.*, 1985; Al-Ali *et al.*, 2005; Taha *et al.*, 2019). In the present study, only gender significantly influenced the decision to retreat/extract a tooth. The females had 1.62

more chances to indicate a tooth for a reintervention than males. Al-Ali *et al.* (2005) also found that women had a greater propensity to retreat; however, in Saudi Arabia, dental education is separately provided to female and male students, a cultural factor that does not apply to our reality. Similar studies have failed to find differences in the clinical decision-making regarding gender (Aryanpour *et al.*, 2000; Heinikainen *et al.*, 2002; Taha *et al.*, 2019). In the present study, 60% of the sample were females, and although the logistic regression has adjusted these variables, this may have increased the odds of reintervention. Participants' age and time of experience did not have a significant effect on their clinical decision making. This finding differs from previous investigations that showed that experience time was a significant factor in the preferred treatment options (Aryanpour *et al.*, 2000; Taha *et al.*, 2019). However, in these studies, the observers were dental students (undergraduate or postgraduate students) and general dentists or endodontists, groups with very different experience times. In the present study, the general dentists and endodontists had similar means of experience: 19.29 and 18.86 years, respectively. Also, participants of both groups had at least six years of clinical experience (Table 1), which is a considerable period of dental practice.

At the four study time points, the participants were asked to define their confidence level. This question aimed to assess if the available information was sufficient for the clinicians to define diagnosis and treatment plan, in other words, how confident they felt assessing the edited and unedited radiographs. High averages were found at all four time points, which is somewhat surprising. Clinicians felt confident even when assessing only the root filling quality (T1) or only the periapical status (T2). This finding may reflect real confidence on the part of participants or an embarrassment in expressing their uncertainties in front of researchers. This information can also be an alert for the fact that clinicians in their dental practice may be making clinical decisions even when they receive partial information of the case, for example, receiving only the x-ray, without complete clinical data.

Regarding the influence of experience level on the confidence level to define a diagnosis, there was a significant difference only at T4, when endodontists felt more confident than non-specialists. The same difference was detected for the confidence level to define the treatment plan at T3 and T4. This may be explained by the specialized knowledge of endodontists about the importance of biological and radiographic variables in the outcome of endodontic treatment, which allow them to make decisions with more confidence (Heinikainen *et al.*, 2002; Wenteler *et al.*, 2015; Çiçek *et al.*, 2016).

The benefits of CBCT in the endodontic field, regarding diagnosis and decision making, has been the focus of several investigations (Mota De Almeida *et al.*, 2014; Petersson *et al.*,

2012; Rodríguez *et al.*, 2017). In the present study, significantly more endodontists than general practitioners requested CBCT to aid in their treatment decisions at T2 and T3. This is probably explained by the fact that endodontists are professionals more familiarized with the use of CBCT to evaluate endodontic problems (Rodríguez *et al.*, 2017). According to Mota De Almeida (2019), a “better safe than sorry” attitude lower the threshold of CBCT usage by endodontists in certain cases. Nonetheless, there is a clear recommendation in the literature that CBCT should not be used as a diagnostic tool in the daily routine of endodontists (SEDENTEXCT 2012; Nair *et al.*, 2015; Patel *et al.*, 2019). The clinicians should request a CBCT exam in specific situations after conventional radiographs have been taken and assessed, and the information provided was not sufficient for a solid diagnosis and treatment planning (Nair *et al.*, 2015).

One may argue that the lack of standardization of the electronic screen on which the observers evaluated the radiographs is a limitation of the study. Unfortunately, when electronic questionnaires are used, this aspect cannot be controlled. Nevertheless, according to previous investigations, the type of display device did not affect the diagnostic accuracy of detecting vertical root fracture and caries lesions (Isidor *et al.*, 2009; Araki *et al.*, 2015; Vasconcelos *et al.*, 2016).

Conclusion

The main reason that influenced the clinical management of endodontically treated teeth was the presence of clinical signs and symptoms. Professional gender and experience level, periapical status, root filling quality also influenced the decision-making process. In general, the participants felt confident during all study time points; however, endodontists felt more confident in their clinical decisions and requested more CBCT to aid in their decision-making process than non-specialists.

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Tables

Table 1 Baseline characteristics of the sample.

Variables	Clinician group	N (%)	Mean (min-max)
Gender	Non-specialists	Female	7 (50)
		Male	7 (50)
	Endodontists	Female	10 (71.4)
		Male	4 (28.6)
Age	Non-specialists		42.29 (28-70)
	Endodontists		40.21 (27-54)
Years of experience	Non-specialists		19.29 (6-49)
	Endodontists		18.86 (7-32)
Years of experience in endodontics	Endodontists		12.36 (5-20)

Table 2 Frequency distribution of preferred treatment options by the two groups of participants at each study time point.

	Treatment	Non-specialists N(%)	Endodontists N(%)	Total
T1	Wait-and-see	284 (67.6)	274 (65.2)	559 (66.5)
	NSR	118 (28.1)	134 (31.9)	252 (30.0)
	Apical surgery	4 (1.0)	7 (1.7)	11 (1.3)
	NSR + Apical surgery	3 (0.7)	1 (0.2)	4 (0.4)
	Extraction	11 (2.6)	4 (1.0)	15 (1.7)
	Total	420	420	840
T2	Wait-and-see	296 (70.5)	283 (67.4)	579 (68.9)
	NSR	104 (24.8)	129 (30.7)	233 (27.7)
	Apical surgery	1 (0.2)	0	1 (0.1)
	NSR + Apical surgery	13 (3.1)	4 (1.0)	10 (0.1)
	Extraction	6 (1.4)	4 (1.0)	10 (0.1)
	Total	420	420	840
T3	Wait-and-see	259 (61.7)	252 (60.0)	511 (60.8)
	NSR	130 (31.0)	157 (37.4)	287 (34.1)
	Apical surgery	10 (2.4)	4 (1.0)	14 (1.6)
	NSR + Apical surgery	17 (4.0)	6 (1.4)	23 (2.7)
	Extraction	4 (1.0)	1 (0.2)	5 (0.5)
	Total	420	420	840
T4	Wait-and-see	263 (62.6)	223 (53.1)	486 (57.8)
	NSR	131 (31.2)	187 (44.5)	318 (37.8)
	Apical surgery	8 (1.9)	3 (0.7)	11 (1.3)
	NSR + Apical surgery	13 (3.1)	5 (1.2)	18 (2.1)
	Extraction	5 (1.2)	2 (0.5)	7 (0.8)
	Total	420	420	840

NSR: Nonsurgical retreatment; T1: Evaluation of the root canal filling; T2: Evaluation of the periapical status; T3: Evaluation of the complete radiograph; T4: Re-evaluation of the complete radiograph + clinical data.

Table 3 Binary and multivariate logistic regression analyses between the indication of reintervention at T4 and other variables.

Variables	P	OR binary (IC 95%)	P	OR multivariate (IC 95%)
Age				
≤ 39 years				
>39 years	0.780	1.04 (0.79-1.36)		
Graduation				
<16 years				
>16 years	0.889	0.98 (0.74-1.29)		
Gender				
Male				
Female	0.031	1.36 (1.02-1.81)	0.020	1.62 (1.07-2.45)
Experience level				
Non-specialists				
Endodontists	0.005	1.48 (1.12-1.94)	0.000	2.68 (1.76-4.06)
Root filling quality at T1				
Adequate				
Inadequate	0.001	1.59 (1.21-2.10)		
Periapical status at T2				
Healthy				
Disease	0.000	5.98 (4.42-8.08)	0.023	1.66 (1.07-2.57)
Root filling quality at T3				
Adequate				
Inadequate	0.000	2.15 (1.63-2.84)		
Periapical status at T3				
Healthy				
Disease	0.000	6.15 (4.48-8.44)	0.436	1.22 (0.73-2.03)
Root filling quality at T4				
Adequate				
Inadequate	0.000	4.14 (3.09-5.55)	0.000	5.34 (3.51-8.12)
Periapical status at T4				
Healthy				
Disease	0.000	12.21 (8.92-17.5)	0.000	4.27 (2.54-7.17)
Signs or symptoms				
Absent				
Present	0.000	13.25 (9.49-18.51)	0.000	9.58 (6.24-14.70)

T1: Evaluation of the root canal filling; T2: Evaluation of the periapical status; T3: Evaluation of the complete radiograph; T4: Re-evaluation of the complete radiograph + clinical data.

Table 4 Participants' confidence level to define the diagnosis and the best treatment option (means \pm standard deviations) at each study time point.

Experience level		T1	T2	T3	T4
Confidence level in diagnosis	Non-specialists	3.95 \pm 0.74 ^{A,d}	4.05 \pm 0.66 ^{A,c}	4.19 \pm 0.53 ^{A,b}	4.40 \pm 0.58 ^{B,a}
	Endodontists	3.88 \pm 1.16 ^{A,c}	3.85 \pm 1.08 ^{A,c}	4.18 \pm 0.79 ^{A,b}	4.58 \pm 0.72 ^{A,a}
Confidence level in treatment option	Non-specialists	3.90 \pm 0.75 ^{A,d}	3.99 \pm 0.70 ^{A,c}	4.04 \pm 0.65 ^{B,b}	4.38 \pm 0.63 ^{B,a}
	Endodontists	3.81 \pm 1.28 ^{A,c}	3.77 \pm 1.14 ^{A,c}	4.12 \pm 0.85 ^{A,b}	4.56 \pm 0.75 ^{A,a}

T1: Evaluation of the root canal filling; T2: Evaluation of the periapical status; T3: Evaluation of the complete radiograph; T4: Re-evaluation of the complete radiograph + clinical data. Distinct uppercase letters represent significant differences between experience levels (column). Distinct lowercase letters represent significant differences among time points (row).

Table 5 Absolute (N) and relative (%) frequencies of the observers who would request a CBCT exam at each study time point.

	Experience level	N	T1	T2	T3	T4
CBCT request	Non-specialists	420	120 (28.6) ^{A,a}	87 (20.7) ^{B,b}	92 (21.9) ^{B,b}	93 (22.1) ^{A,b}
	Endodontists	420	123 (29.3) ^{A,a}	128 (30.5) ^{A,a}	121 (28.8) ^{A,a}	111 (26.4) ^{A,a}

CBCT: Cone-beam computed tomography; T1: Evaluation of the root canal filling; T2: Evaluation of the periapical status; T3: Evaluation of the complete radiograph; T4: Re-evaluation of the complete radiograph + clinical data. Distinct uppercase letters represent significant differences between experience levels (column). Distinct lowercase letters represent significant differences among time points (row).

Figures

Figure 1 – Edited and unedited periapical radiographs. (A) T1 – Periapical area was covered, providing information only about the technical quality of the root canal treatment. (B) T2 – Tooth structure was covered; thus, only the periapical status was available for evaluation. (C) T3 – Unedited radiograph.

3 CONSIDERAÇÕES FINAIS

A literatura ainda é inconclusiva sobre as variáveis que influenciam o manejo de dentes tratados endodonticamente. O presente estudo verificou a influência de fatores relacionados ao profissional e ao dente (dados clínicos e radiográficos) em relação à tomada de decisão clínica de cirurgiões-dentistas com ou sem especialização em Endodontia, quando analisados isoladamente e depois em conjunto.

O gênero e o nível de experiência clínica influenciaram significativamente a tomada de decisão dos participantes, sendo as mulheres e os endodontistas os mais propensos a indicar o elemento dentário para uma reintervenção, incluindo retratamento não-cirúrgico, cirurgia parodontal e exodontia. O conhecimento teórico e técnico a respeito das abordagens disponíveis para dentes que falharam do ponto de vista endodôntico possivelmente influenciou a tomada de decisão clínica dos especialistas em Endodontia. Da mesma forma, os endodontistas solicitaram mais vezes, ao longo do estudo, um exame de TCFC para auxiliar na avaliação do caso, uma vez que devido à prática clínica estão mais habituados com a solicitação e interpretação de exames complementares de imagem.

Em relação às características radiográficas do dente, a qualidade do tratamento endodôntico avaliada em T4 influenciou significativamente a tomada de decisão clínica. Já o status periapical apresentou influência significativa na decisão de tratamento quando avaliado isoladamente (T2) ou associado aos demais dados (T4). No entanto, a presença de sinais e sintomas (T4) foi a variável que mais impactou a tendência dos profissionais em reintervir sobre os elementos dentários. Em T4, quando os observadores tiveram acesso à radiografia completa e aos dados clínicos do caso, a avaliação do periápice teve maior impacto na decisão clínica, quando comparado aos momentos anteriores (T2 e T3). Tal fato parece demonstrar uma influência da presença de sinais e sintomas na avaliação dos achados radiográficos.

Os participantes de ambos os grupos (especialistas e não-especialistas) demonstraram médias mais altas de nível de confiança na definição do diagnóstico e do tratamento em T4. Porém, valores relativamente altos de confiança também foram observados nos demais tempos do estudo. Tal achado é considerado surpreendente, uma vez que em T1, T2 e T3 os observadores tiveram acesso a informações limitadas do caso clínico.

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ANEXO A – NORMAS PARA SUBMISSÃO DE ARTIGO CIENTÍFICO NO PERIÓDICO *INTERNATIONAL ENDODONTIC JOURNAL*



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Author Guidelines

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- [2. Ethical Guidelines](#)
- [3. Manuscript Submission Procedure](#)
- [4. Manuscript Types Accepted](#)
- [5. Manuscript Format and Structure](#)
- [6. Graphical Abstracts](#)
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1. GENERAL

International Endodontic Journal publishes original scientific articles, reviews, clinical articles and case reports in the field of Endodontology; the branch of dental sciences dealing with health, injuries to and diseases of the pulp and periradicular region, and their relationship with systemic well-being and health. Original scientific articles are published in the areas of biomedical science, applied materials science, bioengineering, epidemiology and social science relevant to endodontic disease and its management, and to the restoration of root-treated teeth. In addition, review articles, reports of clinical cases, book reviews, summaries and abstracts of scientific meetings and news items are accepted.

1.1 Preprints Policy

International Endodontic Journal will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors are requested to update any pre-publication versions with a link to the final published article.

1.2. Data Sharing

International Endodontic Journal encourages authors to share the data and other artefacts supporting the results in the paper by archiving it in an appropriate public repository. Authors should include a data accessibility statement, including a link to the repository they have used, in order that this statement can be published alongside their paper. All accepted manuscripts may elect to publish a data availability statement to confirm the presence or absence of shared data. If you have shared data, this statement will describe how the data can be accessed, and include a persistent identifier (e.g., a DOI for the data, or an accession number) from the repository where you shared the data. Sample statements are available [here](#). If published, statements will be placed in the heading of your manuscript.

1.3 Open Access

International Endodontic Journal is a subscription journal that offers an open access option. You'll have the option to choose to make your article open access after acceptance, which will be subject to an APC. You can [read more about APCs](#) and whether you may be eligible for waivers or discounts, through your institution, funder, or a country waiver.

Please read the instructions below carefully for details on the submission of manuscripts, the journal's requirements and standards as well as information concerning the procedure after a manuscript has been accepted for publication in *International Endodontic Journal*. Authors are encouraged to visit [Wiley Author Services](#) for further information on the preparation and submission of articles and figures.

2. ETHICAL GUIDELINES

International Endodontic Journal adheres to the below ethical guidelines for publication and research.

2.1 Authorship and Acknowledgements

The policy of the journal is that only ONE corresponding author is accepted.

Authors submitting a paper do so on the understanding that the manuscript has been read and approved by all authors and that all authors agree to the submission of the manuscript to the Journal.

International Endodontic Journal adheres to the definition of authorship set up by The International Committee of Medical Journal Editors (ICMJE). According to the ICMJE, authorship criteria should be based on 1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data, 2) drafting the article or revising it critically for important intellectual content and 3) final approval of the version to be published. Authors should meet conditions 1, 2 and 3.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited. Please also include specifications of the source of funding for the study and any potential conflict of interests if appropriate. Please find more information on the conflict of interest form in section 2.6.

2.2 Ethical Approvals

Experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical Association [Declaration of Helsinki](#) (version 2008) and the additional requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included. Editors reserve the right to reject papers if there are doubts as to whether appropriate procedures have been used.

When experimental animals are used the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA regarding the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

All studies using human or animal subjects should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study. The authors MUST upload a copy of the ethical approval letter when submitting their manuscript and a separate English translation. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

2.3 Clinical Trials

The International Endodontic Journal asks that authors submitting manuscripts reporting from a clinical trial to register the trial *a priori* in any of the following public clinical trials registries: www.clinicaltrials.gov, <https://www.clinicaltrialsregister.eu/>, <http://isrctn.org/>. Other primary registries if named in the WHO network will also be considered acceptable. The clinical trial registration number and name of the trial register should be included in the Acknowledgements at the submission stage.

2.3.1 Randomised control clinical trials

Randomised clinical trials should be reported using the Preferred Reporting Items for RANdomized TRIals in Endodontics (PRIRATE) 2020 guidelines. A PRIRATE checklist and flowchart (as a Figure) should also be completed and included in the submission material. The PRIRATE 2020 checklist and flowchart can be downloaded from: <http://pride-endodonticguidelines.org/prirate/>

It is recommended that authors consult the following papers, which explains the rationale for the PRIRATE 2020 guidelines and their importance when writing manuscripts:

Nagendrababu V, Duncan HF, Bjørndal L, Kvist T, Priya E, Jayaraman J, Pulikkotil SJ, Pigg M, Rechenberg DK, Vaeth M, Dummer P. PRIRATE 2020 guidelines for reporting randomized trials in Endodontics: a consensus-based development. *Int Endod J*. 2020 Mar 20. doi: 10.1111/iej.13294. (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13294>)

Nagendrababu V, Duncan HF, Bjørndal L, Kvist T, Priya E, Jayaraman J, Pulikkotil SJ, Dummer P. PRIRATE 2020 guidelines for reporting randomized trials in Endodontics: Explanation and elaboration. *Int Endod J*. 2020 April 8. doi: 10.1111/iej.13304 (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13304>)

2.3.2 Epidemiological observational trials

Submitting authors of epidemiological human observations studies are required to review and submit a 'strengthening the reporting of observational studies in Epidemiology' (STROBE) checklist and statement. Compliance with this should be detailed in the materials and methods section. (www.strobe-statement.org)

2.4 Systematic Reviews

The abstract and main body of the systematic review should be reported using the PRISMA for Abstract and PRISMA guidelines respectively (<http://www.prisma-statement.org/>). Authors submitting a systematic review should register the protocol in one of the readily-accessible sources/databases at the time of project inception and not retrospectively (e.g. PROSPERO database, OSF registries). The protocol registration number, name of the database or journal reference should be provided at the submission stage in the "Registration" section in the abstract and 'Methods' section in the main body of the text. A PRISMA checklist and flow diagram (as a Figure) should also be included in the submission material. Source of funding (grant number, if available) should be added in 'Acknowledgements' section.

It is recommended that authors consult the following papers, which help in the production of high quality reviews:

1. Nagendrababu V, Duncan HF, Tsesis I, Sathorn C, Pulikkotil SJ, Dharmarajan L, Dummer PMH. PRISMA for abstracts: best practice for reporting abstracts of systematic reviews in Endodontology. *Int Endod J*. 2019 Mar 19;1096-07. doi: 10.1111/iej.13118.
2. Nagendrababu V, Dilokthornsakul P, Jinatongthai P, Veettil SK, Pulikkotil SJ, Duncan HF, Dummer PMH. Glossary for systematic reviews and meta-analyses. *Int Endod J*. 2020 Feb;53(2):232-249. doi: 10.1111/iej.13217. Epub 2019 Nov 25.

2.5 DNA Sequences and Crystallographic Structure Determinations

Papers reporting protein or DNA sequences and crystallographic structure determinations will not be accepted without a Genbank or Brookhaven accession number, respectively. Other supporting data sets must be made available on the publication date from the authors directly.

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International Endodontic Journal requires that all authors (both the corresponding author and co-authors) disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or indirectly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include but are not limited to patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. If authors are unsure whether a past or present affiliation or relationship should be disclosed in the manuscript, please contact the editorial office at iejeditor@cardiff.ac.uk. The existence of a conflict of interest does not preclude publication in this journal.

The above policies are in accordance with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals produced by the International Committee of Medical Journal Editors (<http://www.icmje.org>).

It is the responsibility of the corresponding author to have all authors of a manuscript fill out a conflict of interest disclosure form, and to upload all forms individually (do not combine the forms into one file) together with the manuscript on submission. The disclosure statement should be included under Acknowledgements. Please find the form below:

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As part of the journal's commitment to supporting authors at every step of the publishing process, *International Endodontic Journal* requires the submitting author (only) to provide an ORCID ID when submitting a manuscript. This takes around 2 minutes to complete. Please see Wiley's resources on ORCID [here](#).

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Clinical Techniques: are suited to describe significant improvements in clinical practice such as the report of a novel technique, a breakthrough in technology or practical approaches to recognised clinical challenges. They should conform to the highest scientific and clinical practice standards.

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5. MANUSCRIPT FORMAT AND STRUCTURE

5.1. Format

Language: The language of publication is English. It is preferred that manuscript is professionally edited.

Presentation: Authors should pay special attention to the presentation of their research findings or clinical reports so that they may be communicated clearly. Technical jargon should be avoided as much as possible and clearly explained where its use is unavoidable. Abbreviations should also be kept to a minimum, particularly those that are not standard. The background and hypotheses underlying the study, as well as its main conclusions, should be clearly explained. Titles and abstracts especially should be written in language that will be readily intelligible to any scientist.

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5.2. Structure

All manuscripts submitted to *International Endodontic Journal* should include Title Page, Abstract, Main Text, References and Acknowledgements, Tables, Figures and Figure Legends as appropriate

Title Page: The title page should bear: (i) Title, which should be concise as well as descriptive; (ii) Initial(s) and last (family) name of each author; (iii) Name and address of department, hospital or institution to which work should be attributed; (iv) Running title (no more than 30 letters and spaces); (v) No more than six keywords (in alphabetical order); (vi) Name, full postal address, telephone, fax number and e-mail address of author responsible for correspondence.

Abstract for Original Scientific Articles should be no more than 350 words giving details of what was done using the following structure:

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- **Title:** Identify the report as a systematic review, meta-analysis, or both.
- **Background:** Provide a brief introduction of the subject and why it is important.
- **Objectives:** The research question including components such as participants, interventions, comparators, and outcomes. Use PICO format.
- **Methods:** Briefly describe i) the inclusion criteria, ii) provide databases searched and dates, iii) mention the method used to assess study quality (risk of bias) iv) meta-analysis methodology (if appropriate).
- **Results:** i) Number and type of included studies and participants ii) results for main outcomes (benefits and harms). If a meta-analysis was undertaken, include summary measures and confidence intervals. iii) direction of the effect in terms that are meaningful to clinicians and patients.
- **Discussion:** i) Strengths and ii) limitations of evidence.
- **Conclusions:** General interpretation of the results and important implications.
- **Funding:** Primary source of funding for the review (if no funding: say 'none').
- **Registration:** Registration number and name.

Abstract for Review Articles (narrative)

The Abstract should be unstructured and no more than 350 words.

Abstract for Clinical Techniques and Case Reports should be no more than 350 words using the following structure:

- **Aim:** Give a clear statement of the main aim of the report and the clinical problem which is addressed.
- **Summary:** Describe briefly the clinical technique(s) or the case report(s).
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Main Text of Original Scientific Article should include Introduction, Materials and Methods, Results, Discussion and Conclusion:

- **Introduction:** should be focused, outlining the historical or logical origins of the study and gaps in knowledge. Exhaustive literature reviews are not appropriate. It should close with the explicit statement of the specific aims of the investigation, or hypothesis to be tested.
- **Material and Methods:** must contain sufficient detail such that, in combination with the references cited, all clinical trials and experiments reported can be fully reproduced.

(i) **Clinical Trials** should be reported using the PRIRATE 2020 guidelines. A PRIRATE 2020 checklist must be completed and included along with a flow diagram (as a Figure) in the submission material. These are available at <http://pride-endodonticguidelines.org/prirate/>.

(ii) **Experimental Subjects:** experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical Association [Declaration of Helsinki](#) (version 2008) and the additional requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included. Editors reserve the right to reject papers if there are doubts as to whether appropriate procedures have been used.

When experimental animals are used the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA regarding the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

All studies using human or animal subjects should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

(iii) **Suppliers:** Suppliers of materials should be named and their location (Company, town/city, state, country) included.

- **Results:** should present the observations with minimal reference to earlier literature or to possible interpretations. Data should not be duplicated in Tables and Figures.
- **Discussion:** may usefully start with a brief summary of the major findings, but repetition of parts of the abstract or of the results section should be avoided. The Discussion section should progress with a review of the methodology before discussing the results in light of previous work in the field. The Discussion should end with a brief conclusion and a comment on the potential clinical relevance of the findings. Statements and interpretation of the data should be appropriately supported by original references.
- **Conclusion:** should contain a summary of the findings.

Main Text of Systematic Review Articles should be divided into Introduction, Methods, Results and Conclusions:

- **Introduction:** Should be focused to place the subject matter in context and to justify the need for the review.
- **Method:** Divide into logical sub-sections in order to improve readability and enhance understanding (e.g. details of protocol registration, literature search process, inclusion/exclusion criteria, data extraction, quality assessment, outcome(s) of interest, data synthesis and statistical analysis, quality of evidence).
- **Results:** Present in structured fashion (e.g. results of the search process, characteristics of the included studies, results of primary meta-analysis, additional analysis, publication bias, quality of evidence).
- **Discussion:** Should summarize the results, highlighting completeness and applicability of evidence, quality of evidence, agreements and disagreements with other studies or reviews, strength and limitations, implications for practice and research.
- **Conclusion(s):** Section should reach clear conclusions and/or recommendations on the basis of the evidence presented.

Main Text of Review Articles should be divided into Introduction, Review and Conclusions. The Introduction section should be focused to place the subject matter in context and to justify the need for the review. The Review section should be divided into logical sub-sections in order to improve readability and enhance understanding. Search strategies must be described and the use of state-of-the-art evidence-based systematic approaches is expected. The use of tabulated and illustrative material is encouraged. The Conclusion section should reach clear conclusions and/or recommendations on the basis of the evidence presented.

Main Text of Clinical Techniques and Case Reports should be divided into Introduction, Report, Discussion and Conclusion. They should be well illustrated with clinical images, radiographs, diagrams and, where appropriate, supporting tables and graphs. However, all illustrations must be of the highest quality.

Case reports should be written using the Preferred Reporting Items for Case reports in Endodontics (PRICE) 2020 guidelines. A PRICE checklist and flowchart (as a Figure) should also be completed and included in the submission material. The PRICE 2020 checklist and flowchart can be downloaded from: <http://pride-endodonticguidelines.org/price/>.

It is recommended that authors consult the following papers, which explains the rationale for the PRICE 2020 guidelines and their importance when writing manuscripts:

Nagendrababu V, Chong BS, McCabe P, Shah PK, Priya E, Jayaraman J, Pulikkotil SJ, Setzer FC, Sunde PT, Dummer PMH. PRICE 2020 guidelines for reporting case reports in Endodontics: a consensus-based development. *Int Endod J*. 2020 Feb 23. doi: 10.1111/iej.13285. (<https://www.ncbi.nlm.nih.gov/pubmed/32090342>)

Nagendrababu V, Chong BS, McCabe P, Shah PK, Priya E, Jayaraman J, Pulikkotil SJ, Dummer PMH. PRICE 2020 guidelines for reporting case reports in Endodontics: Explanation and elaboration. *Int Endod J*. (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13300>)

Acknowledgements: *International Endodontic Journal* requires that all sources of institutional, private and corporate financial support for the work within the manuscript must be fully acknowledged, and any potential conflicts of interest noted. Grant or contribution numbers may be acknowledged, and principal grant holders should be listed. Acknowledgments should be brief and should not include thanks to anonymous referees and editors. See also above under Ethical Guidelines.

5.3. References

It is the policy of the Journal to encourage reference to the original papers rather than to literature reviews. Authors should therefore keep citations of reviews to the absolute minimum.

We recommend the use of a tool such as [EndNote](#) or [Reference Manager](#) for reference management and formatting. The EndNote reference style can be obtained upon request to the editorial office (iejeditor@cardiff.ac.uk). Reference Manager reference styles can be searched for here: www.refman.com/support/rmstyles.asp

In the text: single or double authors should be acknowledged together with the year of publication, e.g. (Pitt Ford & Roberts 1990). If more than two authors the first author followed by *et al.* is sufficient, e.g. (Tobias *et al.* 1991). If more than 1 paper is cited the references should be in year order and separated by ";", e.g. (Pitt Ford & Roberts 1990, Tobias *et al.* 1991).

Reference list: All references should be brought together at the end of the paper in alphabetical order and should be in the following form.

- (i) Names and initials of up to six authors. When there are seven or more, list the first three and add *et al.*
- (ii) Year of publication in parentheses
- (iii) Full title of paper followed by a full stop (.)
- (iv) Title of journal in full (in italics)
- (v) Volume number (bold) followed by a comma (,)
- (vi) First and last pages

Examples of correct forms of reference follow:

Standard journal article

Bergenholtz G, Nagaoka S, Jontell M (1991) Class II antigen-expressing cells in experimentally induced pulpitis. *International Endodontic Journal* **24**, 8-14.

Corporate author

British Endodontic Society (1983) Guidelines for root canal treatment. *International Endodontic Journal* **16**, 192-5.

Journal supplement

Frumin AM, Nussbaum J, Esposito M (1979) Functional asplenia: demonstration of splenic activity by bone marrow scan (Abstract). *Blood* **54** (Suppl. 1), 26a.

Books and other monographs**Personal author(s)**

Gutmann J, Harrison JW (1991) *Surgical Endodontics*, 1st edn Boston, MA, USA: Blackwell Scientific Publications.

Chapter in a book

Wesselink P (1990) Conventional root-canal therapy III: root filling. In: Harty FJ, ed. *Endodontics in Clinical Practice*, 3rd edn; pp. 186-223. London, UK: Butterworth.

Published proceedings paper

DuPont B (1974) Bone marrow transplantation in severe combined immunodeficiency with an unrelated MLC compatible donor. In: White HJ, Smith R, eds. *Proceedings of the Third Annual Meeting of the International Society for Experimental Rematology*; pp. 44-46. Houston, TX, USA: International Society for Experimental Hematology.

Agency publication

Ranofsky AL (1978) *Surgical Operations in Short-Stay Hospitals: United States-1975*. DHEW publication no. (PHS) 78-1785 (Vital and Health Statistics; Series 13; no. 34.) Hyattsville, MD, USA: National Centre for Health Statistics.8

Dissertation or thesis

Saunders EM (1988) *In vitro and in vivo investigations into root-canal obturation using thermally softened gutta-percha techniques* (PhD Thesis). Dundee, UK: University of Dundee.

URLs

Full reference details must be given along with the URL, i.e. authorship, year, title of document/report and URL. If this information is not available, the reference should be removed and only the web address cited in the text.

Smith A (1999) Select committee report into social care in the community [WWW document]. URL <http://www.dhss.gov.uk/reports/report015285.html>

5.4. Tables, Figures and Figure Legends

Tables: Tables should be double-spaced with no vertical rulings, with a single bold ruling beneath the column titles. Units of measurements must be included in the column title.

Figures: All figures should be planned to fit within either 1 column width (8.0 cm), 1.5 column widths (13.0 cm) or 2 column widths (17.0 cm), and must be suitable for photocopy reproduction from the printed version of the manuscript. Lettering on figures should be in a clear, sans serif typeface (e.g. Helvetica); if possible, the same typeface should be used for all figures in a paper. After reduction for publication, upper-case text and numbers should be at least 1.5-2.0 mm high (10 point Helvetica). After reduction, symbols should be at least 2.0-3.0 mm high (10 point). All half-tone photographs should be submitted at final reproduction size. In general, multi-part figures should be arranged as they would appear in the final version. Reduction to the scale that will be used on the page is not necessary, but any special requirements (such as the separation distance of stereo pairs) should be clearly specified.

Unnecessary figures and parts (panels) of figures should be avoided; data presented in small tables or histograms, for instance, can generally be stated briefly in the text instead. Figures should not contain more than one panel unless the parts are logically connected; each panel of a multipart figure should be sized so that the whole figure can be reduced by the same amount and reproduced on the printed page at the smallest size at which essential details are visible.

Figures should be on a white background, and should avoid excessive boxing, unnecessary colour, shading and/or decorative effects (e.g. 3-dimensional skyscraper histograms) and highly pixelated computer drawings. The vertical axis of histograms should not be truncated to exaggerate small differences. The line spacing should be wide enough to remain clear on reduction to the minimum acceptable printed size.

Figures divided into parts should be labelled with a lower-case, boldface, roman letter, a, b, and so on, in the same typesize as used elsewhere in the figure. Lettering in figures should be in lower-case type, with the first letter capitalized. Units should have a single space between the number and the unit, and follow SI nomenclature or the nomenclature common to a particular field. Thousands should be separated by a thin space (1 000). Unusual units or abbreviations should be spelled out in full or defined in the legend. Scale bars should be used rather than magnification factors, with the length of the bar defined in the legend rather than on the bar itself. In general, visual cues (on the figures themselves) are preferred to verbal explanations in the legend (e.g. broken line, open red triangles etc.)

Figure legends: Figure legends should begin with a brief title for the whole figure and continue with a short description of each panel and the symbols used; they should not contain any details of methods.

Permissions: If all or part of previously published illustrations are to be used, permission must be obtained from the copyright holder concerned. This is the responsibility of the authors before submission.

Preparation of Electronic Figures for Publication: Although low quality images are adequate for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit EPS (lineart) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented programmes. Scans (TIFF only) should have a resolution of 300 dpi (halftone) or 600 to 1200 dpi (line drawings) in relation to the reproduction size (see below). EPS files should be saved with fonts embedded (and with a TIFF preview if possible). For scanned images, the scanning resolution (at final image size) should be as follows to ensure good reproduction: lineart: >600 dpi; half-tones (including gel photographs): >300 dpi; figures containing both halftone and line images: >600 dpi.

Further information can be obtained at Wiley Blackwell's guidelines for figures: <http://authorservices.wiley.com/bauthor/illustration.asp>.

Check your electronic artwork before submitting it: <http://authorservices.wiley.com/bauthor/eachecklist.asp>

6. GRAPHICAL ABSTRACT

Authors are invited to submit a graphical abstract along with their manuscript to be published in the International Endodontic Journal's:

- Online table of contents.
- Content alert emails.
- Within the article.

The graphical abstract should visually convey the key findings of the report and present a clear message to the reader. It should be used as a means of attracting the readers' attention and promoting further engagement with the article.

To create an effective graphical abstract, authors should focus on presenting to the reader what they can learn from the report, communicating only the key message.

Guidelines for designing a Graphical Abstract:

1. Creating a graphical abstract does **not** mean just copying and pasting a figure from the manuscript.
2. Use text sparingly, so the graphical abstract does not become cluttered, but ensure that you have clearly stated the purpose of the report, research design, clinical case and the outcome of the study or case. Use language consistent with terms and definitions in the article that are free of editorialization (personal opinion) or bias.
3. Use only images that you have a legal right to use. Authors are responsible for obtaining permission to use any images that they include from outside sources, including articles, web pages, stock photo sites or Google image searches. Any needed permissions must be submitted along with your graphical abstract or identified in the Acknowledgements section of your manuscript.
4. Exclude imagery that can be viewed as advertisement, such as trade names, logos, or images of trademarked items.
5. The Graphical Abstract should be submitted along with the manuscript through our ScholarOne platform and uploaded with the file designation "Graphical Abstract".
6. Required file properties:
 - Resolution: 700 pixels (width) x 600 pixels (height).
 - Font size: at least 12pt.
 - Font: Calibri.
 - File size should not exceed 1MB.
7. A good example of how a graphical abstract should look can be seen here: <https://onlinelibrary.wiley.com/doi/10.1111/joim.13141>

Please contact the editorial office at IEJeditor@cardiff.ac.uk if you have any questions.

7. AFTER ACCEPTANCE

Upon acceptance of a paper for publication, the manuscript will be forwarded to the Production Editor who is responsible for the production of the journal.

7.1 Wiley Author Services

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7.4 Proofs

Authors will receive an e-mail notification with a link and instructions for accessing HTML page proofs online/with their proofs included as a pdf. Authors should also make sure that any renumbered tables, figures, or references match text citations and that figure legends correspond with text citations and actual figures. Proofs must be returned within 48 hours of receipt of the email.

7.5 Early View

Early View articles are complete full-text articles published online in advance of their publication in a printed issue. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after online publication. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so Early View articles cannot be cited in the traditional way. They are therefore given a Digital Object Identifier (DOI), which allows the article to be cited and tracked before it is allocated to an issue. After print publication, the DOI remains valid and can continue to be used to cite and access the article.

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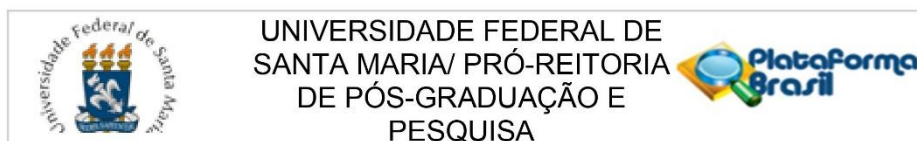
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ANEXO B – PARECER DO COMITÊ DE ÉTICA EM PESQUISA



PARECER CONSUBSTANCIADO DO CEP

DADOS DA EMENDA

Título da Pesquisa: INFLUÊNCIA DE DADOS CLÍNICOS E RADIOGRÁFICOS NA INDICAÇÃO DE RETRATAMENTO ENDODÔNTICO

Pesquisador: Renata Dornelles Morgental

Área Temática:

Versão: 2

CAAE: 26387819.9.0000.5346

Instituição Proponente: Departamento de Estomatologia

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

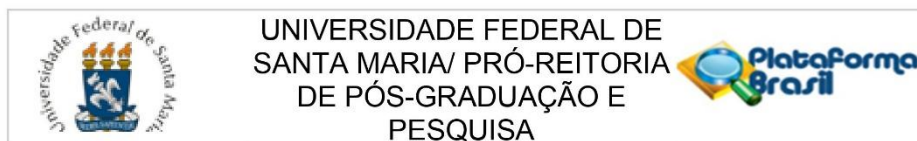
Número do Parecer: 3.970.872

Apresentação do Projeto:

O objetivo do presente estudo é avaliar a influência de fatores clínicos e radiográficos na tomada de decisão clínica de estudantes e profissionais com diferentes níveis de experiência em Endodontia, em relação ao manejo de dentes tratados endodonticamente. A amostra será composta por 12 alunos do último semestre do Curso de Odontologia da Universidade Federal de Santa Maria, 12 alunos do Curso de Especialização em Endodontia do Centro de Pós- Graduação Uningá Eleva, 12 dentistas clínicos gerais e 12 endodontistas do município de Santa Maria/RS. Os participantes

avaliarão 30 casos clínicos contendo dentes tratados endodonticamente, em quatro momentos distintos, com intervalos de um mês, por meio de questionários eletrônicos. Em um primeiro momento, serão avaliadas radiografias periapicais digitais editadas, permitindo apenas a visualização da qualidade da obturação endodôntica (o periápice estará coberto). Após um mês, será realizada a avaliação do status periapical (a raiz estará coberta). Em um terceiro momento, os avaliadores terão acesso à radiografia completa (sem edições). No quarto e último momento, a radiografia completa será novamente analisada, estando associada aos dados clínicos do caso, incluindo histórico médico e odontológico, além de sinais e sintomas do paciente. Em todos os períodos, além da avaliação radiográfica da qualidade da obturação endodôntica e/ou do status periapical, os profissionais deverão definir qual a melhor opção de tratamento para o dente em

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Telefone: (55)3220-9362 **E-mail:** cep.ufsm@gmail.com



Continuação do Parecer: 3.970.872

questão: não intervir/proservar, retratamento endodôntico, cirurgia parendodôntica, retratamento endodôntico + cirurgia parendodôntica ou exodontia. A necessidade de tomografia computadorizada de feixe cônico para a tomada de decisão clínica também será analisada. Os resultados serão expressos em frequências absolutas e relativas. Os dados serão analisados por meio do teste Qui-quadrado, com um nível de significância de 5%.

Objetivo da Pesquisa:

Objetivo primário: avaliar a influência de fatores clínicos e radiográficos na tomada de decisão clínica de estudantes e profissionais com diferentes níveis de experiência em Endodontia, em relação ao manejo de dentes tratados endodonticamente.

Avaliação dos Riscos e Benefícios:

Descritos satisfatoriamente.

Comentários e Considerações sobre a Pesquisa:

Emenda apresentada e justificada satisfatoriamente.

As alterações serão metodológicas. "A aplicação dos questionários e a análise das radiografias que em um primeiro momento aconteceriam pessoalmente nos consultórios dos profissionais ou em suas respectivas instituições de ensino, ocorrerão agora através do envio de formulários digitais do tipo "Google forms", evitando aglomerações e contribuindo para as medidas de contenção da pandemia por COVID-19.

- Alteração no cronograma no item coleta dos dados (previsto para julho/Dezembro de 2020).

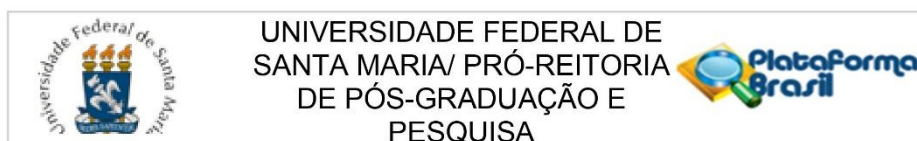
Considerações sobre os Termos de apresentação obrigatória:

Foram apresentados satisfatoriamente.

Recomendações:

Veja no site do CEP - <https://www.ufsm.br/pro-reitorias/prpgp/cep/> - modelos e orientações para apresentação dos documentos. ACOMPANHE AS ORIENTAÇÕES DISPONÍVEIS, EVITE PENDÊNCIAS E AGILIZE A TRAMITAÇÃO DO SEU PROJETO.

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DE PÓS-GRADUAÇÃO E
PESQUISA**

Continuação do Parecer: 3.970.872

Conclusões ou Pendências e Lista de Inadequações:

.

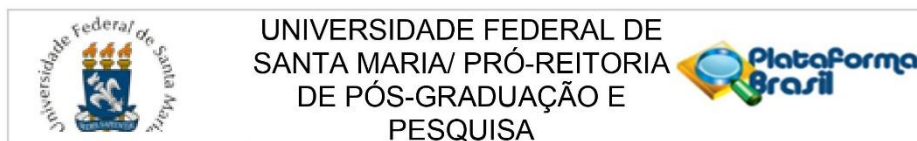
Considerações Finais a critério do CEP:

O proponente do projeto é responsável por indenização aos participantes no caso de manifestação de eventuais danos comprovadamente decorrentes da realização da pesquisa.

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_1531598_E1.pdf	01/04/2020 17:04:34		Aceito
Folha de Rosto	Folha_de_rosto_emenda.pdf	01/04/2020 10:37:06	ISABELLA MARIAN LENA	Aceito
Projeto Detalhado / Brochura Investigador	Projeto_de_pesquisa_ementa.pdf	01/04/2020 10:21:19	ISABELLA MARIAN LENA	Aceito
Declaração de Pesquisadores	Termo_confidencialidade_emenda.pdf	01/04/2020 10:05:47	ISABELLA MARIAN LENA	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE_emenda.pdf	01/04/2020 10:04:48	ISABELLA MARIAN LENA	Aceito
Outros	ementa_27_03_2020.pdf	27/03/2020 16:44:02	ISABELLA MARIAN LENA	Aceito
Outros	memo_circ_n_01_de_2020_PRPGP0001.pdf	27/03/2020 16:43:25	ISABELLA MARIAN LENA	Aceito
Outros	N_022020PROGRAD.pdf	27/03/2020 16:41:45	ISABELLA MARIAN LENA	Aceito
Outros	Registro_GAP_projeto_65230_27nov.pdf	27/11/2019 21:12:01	Renata Dornelles Morgental	Aceito
Declaração de Instituição e Infraestrutura	Autorizacao_institucional_3.pdf	27/11/2019 21:10:49	Renata Dornelles Morgental	Aceito
Declaração de Instituição e Infraestrutura	Autorizacao_institucional_2.pdf	27/11/2019 21:10:31	Renata Dornelles Morgental	Aceito
Declaração de Instituição e Infraestrutura	Autorizacao_institucional_1.pdf	27/11/2019 21:10:19	Renata Dornelles Morgental	Aceito

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Continuação do Parecer: 3.970.872

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

SANTA MARIA, 14 de Abril de 2020

Assinado por:
CLAUDEMIR DE QUADROS
(Coordenador(a))

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UF: RS **Município:** SANTA MARIA
Telefone: (55)3220-9362 **E-mail:** cep.ufsm@gmail.com

APÊNDICE A – INSTRUMENTO DE COLETA DE DADOS

As questões abaixo foram repetidas para os 30 casos avaliados. Os participantes receberam as questões de cada período separadamente (T1, T2, T3 ou T4), com intervalos de um mês entre eles. Em todos os questionários, o primeiro passo foi o preenchimento do TCLE, reiterando o caráter voluntário da participação na pesquisa e garantindo a possibilidade do participante desistir de participar em qualquer momento.

QUESTIONÁRIO 1 (T1)

Influência dos dados clínicos e radiográficos na indicação de retratamento endodôntico - Questionário nº 1

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Título do estudo: 'Influência de dados clínicos e radiográficos na decisão de retratamento endodôntico'

Pesquisador responsável: Renata Dornelles Morgental

Instituição/Departamento: Universidade Federal de Santa Maria / Departamento de Estomatologia

Telefone e endereço postal completo: (55) 3220-9288 / (55) 99978-6669; Avenida Roraima, 1000, Avenida Roraima, nº 1000, Prédio 26F, segundo andar, sala 2250, Bairro Camobi, Santa Maria/RS.

Local da coleta de dados: Questionários eletrônicos

Prezado participante, eu, Renata Dornelles Morgental, responsável pela pesquisa "Influência de dados clínicos e radiográficos na decisão de retratamento endodôntico" juntamente com a mestrandia Isabela Marian Lena, o convidamos a participar como voluntário deste nosso estudo.

Esta pesquisa pretende avaliar a tomada de decisão clínica de estudantes e profissionais com diferentes níveis de experiência em Endodontia, quanto à indicação de retratamento endodôntico, ao observar diferentes casos clínicos com condições radiográficas diversas em relação à qualidade da obturação dos canais e ao status periapical, além de dados clínicos diversos. Quando tais características são analisadas separadamente ou em conjunto. Acreditamos que ela seja importante porque não há um consenso quanto aos fatores que deveriam nortear a decisão de retratar ou não um elemento dentário e sendo essa uma situação corriqueira no dia-a-dia do profissional, torna-se fundamental entender e refletir sobre o processo que delinea as decisões de caráter endodôntico frente à falha da terapia. Sua participação nesse estudo será no sentido responder a um questionário digital onde você irá avaliar 30 radiografias periapicais em 4 momentos diferentes e definir os rumos do tratamento a ser tomado, além de classificá-las de acordo com a qualidade da obturação e o seu status periapical.

É possível que durante a aplicação dos questionários e análise das imagens radiográficas sobre a tela de um computador você se sinta cansado, desconfortável ou constrangido. Dessa forma, você tem o direito de não participar da pesquisa ou de desistir de finalizar o preenchimento do questionário caso tiver iniciado, e neste caso os dados não serão utilizados nos resultados do estudo, ou você pode interromper o preenchimento do questionário, continuando em outro momento. Os benefícios do estudo são indiretos e dizem respeito à geração de conhecimento científico sobre o tema de interesse, ou seja, sobre a tomada de decisão clínica de estudantes e profissionais com diferentes níveis de experiência em Endodontia, quanto à indicação de tratamentos endodônticos.

Uma cópia deste Documento ficará disponível no seu e-mail. Durante todo o período da pesquisa você terá a possibilidade de tirar qualquer dúvida ou pedir qualquer outro esclarecimento. Para isso, entre em contato com algum dos pesquisadores (Isabella Lena: lena.isabella28@gmail.com / Renata Morgental: remorgental@hotmail.com) ou com o Comitê de Ética em Pesquisa.

Você tem garantida a possibilidade de não aceitar participar ou de retirar sua permissão a qualquer momento, sem nenhum tipo de prejuízo pela sua decisão.

As informações desta pesquisa serão confidenciais e poderão divulgadas, apenas, em eventos ou publicações, sem a identificação dos voluntários, a não ser entre os responsáveis pelo estudo, sendo assegurado o sigilo sobre sua participação.

Os gastos necessários para a sua participação na pesquisa serão assumidos pelos pesquisadores. Fica, também, garantida indenização em casos de danos comprovadamente decorrentes da participação na pesquisa.

Desde já agradecemos a sua colaboração com a pesquisa brasileira!

***Obrigatório**

AUTORIZAÇÃO - Eu, após a leitura deste documento, estou suficientemente informado, ficando claro para que minha participação é voluntária e que posso retirar este consentimento a qualquer momento sem penalidades ou perda de qualquer benefício. Estou ciente também dos objetivos da pesquisa, dos procedimentos aos quais serei submetido, dos possíveis danos ou riscos deles provenientes e da garantia de confidencialidade. Diante do exposto e de espontânea vontade, expresse minha concordância em participar deste estudo e assino digitalmente este termo, permanecendo com a cópia eletrônica do mesmo. *

- Autorizo a minha participação
- Não autorizo a minha participação

Próxima

Identificação

Nome *

Sua resposta

CPF *

Sua resposta

Endereço profissional *

Sua resposta

Telefone *

Sua resposta

Gênero *

- Feminino
- Masculino
- Outro: _____

Idade *

Sua resposta _____

Voltar

Próxima

Formação e atuação profissional

Nível de formação profissional *

- Aluno de graduação
- Aluno de pós-graduação
- Clínico geral
- Endodontista

Formação na Odontologia

DESCONSIDERE CASO SEJA ALUNO DE GRADUAÇÃO

Ano de formatura

Sua resposta _____

Instituição de ensino de formação

Sua resposta _____

Formação em Endodontia

DESCONSidere CASO SEJA ALUNO DE GRADUAÇÃO, CLÍNICO GERAL OU ALUNO DE PÓS-GRADUAÇÃO

Ano de formatura na especialização

Sua resposta

Instituição de ensino de formação

Sua resposta

Voltar

Próxima

Avaliação radiográfica

Nesse primeiro momento você visualizará apenas a obturação endodôntica, o periápice estará coberto. Deste modo, pedimos que classifique a qualidade da obturação e defina um tratamento para o dente em questão.



Qualidade da obturação endodôntica *

- Adequada
- Inadequada

Tratamento indicado *

- Não intervir/proservar
- Retratamento endodôntico
- Cirurgia paradodôntica
- Retratamento+Cirurgia paradodôntica
- Exodontia

Considere seu grau de confiança ao definir os diagnósticos (qualidade da obturação) frente ao caso clínico exposto, sendo 1 baixo e 5 alto. *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

Considere seu grau de confiança na tomada de decisão do tratamento indicado frente ao caso clínico exposto, sendo 1 baixo e 5 alto. *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

No caso clínico citado, você solicitaria uma tomografia computadorizada de feixe cônico (cone beam) para auxiliar na tomada de decisão clínica? *

- Não
- Sim

QUESTIONÁRIO 2 (T2)

Influência dos dados clínicos e radiográficos na indicação de retratamento endodôntico

- Questionário nº2

AUTORIZAÇÃO - Eu, após a leitura deste documento, estou suficientemente informado, ficando claro para que minha participação é voluntária e que posso retirar este consentimento a qualquer momento sem penalidades ou perda de qualquer benefício. Estou ciente também dos objetivos da pesquisa, dos procedimentos aos quais serei submetido, dos possíveis danos ou riscos deles provenientes e da garantia de confidencialidade. Diante do exposto e de espontânea vontade, expresso minha concordância em participar deste estudo e assino digitalmente este termo, permanecendo com a cópia eletrônica do mesmo. *

- Autorizo a minha participação
- Não autorizo a minha participação

Identificação

CPF *

Sua resposta

Avaliação radiográfica

Nesse segundo momento você visualizará apenas o periápice, a estrutura radicular estará coberta. Deste modo, pedimos que classifique o status periapical e defina um tratamento para o dente em questão.



Status periapical *

- Ligamento periodontal normal
- Ligamento periodontal espessado
- Lesão periapical

Tratamento indicado *

- Não intervir/proservar
- Retratamento endodôntico
- Cirurgia parendodôntica
- Retratamento+Cirurgia parendodôntica
- Exodontia

Considere seu grau de confiança ao definir o diagnóstico (status periapical) frente ao caso clínico exposto, sendo 1 baixo e 5 alto *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

Considere seu grau de confiança na tomada de decisão do tratamento indicado frente ao caso clínico exposto, sendo 1 baixo e 5 alto. *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

No caso clínico citado, você solicitaria uma tomografia computadorizada de feixe cônico (cone beam) para auxiliar na tomada de decisão clínica?

- Não
- Sim

QUESTIONÁRIO 3 (T3)**Influência dos dados clínicos e radiográficos na indicação de retratamento endodôntico -
Questionário nº3**

*Obrigatório

Identificação

CPF *

Sua resposta

Avaliação radiográfica

Nesse terceiro momento você visualizará a radiografia completa. Deste modo, pedimos que classifique a qualidade da obturação endodôntica, o status periapical e defina um tratamento para o dente em questão.



Qualidade da obturação endodôntica *

- Adequada
- Inadequada

Status periapical *

- Ligamento periodontal normal
- Ligamento periodontal espessado
- Lesão periapical

Tratamento indicado *

- Não intervir/proservar
- Retratamento endodôntico
- Cirurgia parendodôntica
- Retratamento endodôntico+Cirurgia parendodôntica
- Exodontia

Considere seu grau de confiança ao definir os diagnósticos (Qualidade da obturação/status periapical) frente ao caso clínico exposto, sendo 1 baixo e 5 alto

*

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

Considere seu grau de confiança na tomada de decisão do tratamento indicado frente ao caso clínico exposto, sendo 1 baixo e 5 alto. *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

No caso clínico citado, você solicitaria uma tomografia computadorizada de feixe cônico (cone beam) para auxiliar na tomada de decisão clínica? *

- Não
- Sim

QUESTIONÁRIO 4 (T4)

Influência dos dados clínicos e radiográficos na indicação de retratamento endodôntico - Questionário nº4

Identificação

CPF *

Sua resposta

Avaliação radiográfica

Caro participante, chegamos ao quarto e último momento da pesquisa! Sua participação tem um imenso valor, estamos imensamente gratos com sua colaboração com nosso trabalho e principalmente com o auxílio para o desenvolvimento de ciência em nosso país! Nesta quarta etapa você terá acesso a radiografia completa e os dados clínicos do caso em questão. Deste modo, pedimos que classifique a qualidade da obturação endodôntica, o status periapical e defina um tratamento.



Dados clínicos - Dente 36

Sexo	Masculino
Idade	28 anos
Queixa principal	"Bolinha de pus na gengiva"
Saúde sistêmica	Nenhum achado relevante
Sintomatologia dolorosa	Presente e provocada
Dor à percussão	Presente
Dor à palpação	Presente
Tumefação (inchaço) nos tecidos adjacentes	Ausente
Fístula	Presente e localizada no ápice do 36
Tempo de conclusão do tratamento endodôntico	2 anos
Condição clínica da restauração/prótese	Ausente, restauração caiu há mais de 1 ano

Tratamento indicado *

- Não intervir/proservar
- Retratamento endodôntico
- Cirurgia parendodôntica
- Retratamento endodôntico+Cirurgia parendodôntica
- Exodontia

Qualidade da obturação endodôntica *

- Adequada
- Inadequada

Status periapical *

- Ligamento periodontal normal
- Ligamento periodontal espessado
- Lesão periapical

Considere seu grau de confiança ao definir os diagnósticos (Qualidade da obturação/status periapical) frente ao caso clínico exposto, sendo 1 baixo e 5 alto *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

Considere seu grau de confiança na tomada de decisão do tratamento indicado frente ao caso clínico exposto, sendo 1 baixo e 5 alto. *

	1	2	3	4	5	
Baixo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Alto

No caso clínico citado, você solicitaria uma tomografia computadorizada de feixe cônico(cone beam) para auxiliar na tomada de decisão clínica? *

- Não
- Sim