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Evaluation of secondary care in endodontics at a Dental Specialties Center (DSC)

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Abstract *This study aimed to evaluate secondary endodontic care at a Dental Specialties Center (DSC) in Belo Horizonte, MG. Data collection used two forms: (1) on endodontic treatment, completed by the endodontists (2) on the restorative treatment, with data from the medical records. The SPSS 22.0 program was used to analyze the results using frequency and percentiles. In total, 452 endodontic procedures were completed in adult patients. The patients had a median of 39 years of age, most were female (69.7%) and had a primary care referral order (96.2%). Most endodontic treatments were performed in upper premolars (23.7%) followed by lower molars (22.3%), using a mixed technique (74.1%) and in a single session (64.2%). The referral for restorative treatment was for the DSC in 81.2% of cases and finished in 24.1% (n = 109). The counter-referral following restorative treatment occurred in 58.7% of the completed cases. It is necessary to jointly plan the dental treatment between primary and secondary care and, within the latter, among the specialties, in addition to an adequate referral and counter-referral process aimed at ensuring comprehensive care and efficient and effective service.*

Key words *Secondary health care, Endodontics, Oral health services*

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Introduction

With the creation of the Unified Health System (in Portuguese: Sistema Único de Saúde - SUS), the healthcare of the Brazilian population was organized observing the established principles of universalization, decentralization, equity, integrality and social participation. Public actions and services were structured in a network throughout the national territory, with the purpose of improving living conditions and fighting inequities[1,2].

As all SUS services, oral health should be organized based on Primary Health Care (PHC), called in the SUS as Basic Health Care (BHC)[3], and is the gateway to the system[4].

In 2000, the Oral Health Team (OHT) was included in the Family Health Program (FHP), today Family Health Strategy (FHS) to plan oral health actions based on territoriality, guided by social determinants and epidemiological needs of the population[5,6].

In 2004, the Ministry of Health defined the National Oral Health Policy Directives with health promotion, protection and recovery[7,8]. This policy envisaged the creation of Dental Specialties Centers (DSC) and Regional Dental Prosthesis Laboratories (RDLP)[7-9], to build the oral health care network. The DSC acts as a referral for PHC in the medium complexity (secondary care) activities, initially offering the specialties of periodontics, endodontics, care of patients with special needs, stomatology with an emphasis in the diagnosis of oral cancer and minor oral surgery. Subsequently, orthodontics / orthopedics and implantodonty[10] specialties were included.

Organization and control mechanisms were developed for the operation of the recently established care network, such as the systematization of referral and counter-referral, as the healthcare network linkages[11], with PHC as a reference and organizer of care[4].

The ideal interface between primary and secondary care services should take into account some characteristics such as equity, when all adequately diagnosed cases should be referenced to a level of higher complexity without barriers to this referral; integrality, where all necessary treatment must be available and accessible, whether at the primary or secondary level; and efficiency and effectiveness, ensuring that referrals are adequate and with appropriate screening mechanisms; and the counter-referral ensured after the finished treatment, or even, throughout the treatment[12].

The Oral Health Regulation System (in Portuguese: Sistema de Regulação – SISREG) of Belo Horizonte (MG) is an online program that receives requests for referrals to secondary care performed at the Basic Health Unit (BUH) and available vacancies according to criteria and priorities stipulated by the Municipal Health Department. According to SISREG, referral of the patient to the DSC in the specialty of endodontics must be preceded by the control of oral infection at the BHU, through the suitability of the oral environment (crown scaling and polishing, sealing of cavities and extraction of root remains) and prior care with the tooth to be endodontically treated (carious tissue removal, crown access and cavity dressing and sealing). In all cases, it should be evaluated whether the tooth is amenable to prosthetic restoration and whether the subject can receive treatment. Routing priorities are set to high or medium. Front teeth cases are a high priority; incisors, canines and premolars, in individuals of any age, including retreatments; as well as molars of users of any age, without dental loss in the arch where the tooth to be treated is located, to avoid indication of prosthesis. On the other hand, medium priority cases are molar supports of removable partial denture that are the last resort to maintain the vertical dimension of occlusion. Molars with extensive crown destruction and periodontal disease showing mobility, third molars that do not support a pre-existing prosthesis and permanent first molars with incomplete rhizogenesis should not be referred. Scheduling treatment is performed by a BHU employee, according to the need identified on site[13].

After performing the endodontic treatment at the DSC, teeth that can be directly restored should be referred for restoration to the PHC. Teeth requiring indirect restorations should be referred for specialist treatment within the DSC[13]. In Belo Horizonte, the oral prosthesis specialty was included in the DSC to support special cases of total prosthesis, usually performed by PHC, and unitary prostheses, often indicated after completion of endodontic treatment.

Endodontic treatment is an intermediary procedure and has no end in itself. Once completed, the tooth must be restored to its full recovery, avoiding possible fractures, new carious lesions or even its extraction. Given this possible undesired event, it is necessary to know how the service continues the treatment performed.

Knowledge of how SUS services are provided when the patient requires specialized care (DSC)

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enables better planning of actions and strategies that can bring to reality the principles of universalization, equity and integrality. Therefore, this study aimed to evaluate secondary care in endodontics in a Dental Specialties Center (DSC).

Methods

Data of this cross-sectional, quantitative study was collected at the DSC's South-Central administration office of Belo Horizonte (MG). We decided to collect the data of this DSC because it is the first and largest in the municipality. This choice facilitated the study, focusing collection in one place.

This is a convenience, non-probabilistic sample since the site was previously chosen. Sample calculation was performed using a proportional estimation method, considering a prevalence of 50% endodontic treatment, confidence level and accuracy of 5%, resulting in a minimum sample of 384 patients. Twenty percent were added to this amount to provide for eventual study losses, totaling a sample of 461 patients. This is an exploratory study and, thus, the calculation was exclusively used to guide an adequate number of cases for this research.

We collected data related to older adult patients included in the SISREG list[13] and referred by PHC for endodontic treatment to the DSC under study from May to November 2016 and who agreed to participate in the study. The adult population was chosen because, according to the latest national oral health survey[14], adults (35-44 years) had 3.2 times more endodontic needs than adolescents (15-19 years).

Two forms were used for data collection: (1) on endodontic treatment, completed by endodontists who agreed to participate in the study; and (2) data from the patients' medical records on the restorative treatment performed, collected by the researchers.

The questions on referral for endodontic treatment addressed the SISREG definitions: BHU of origin, date of birth, gender (male/female), presence of referral order (yes/no) and date, adequacy of the oral environment (yes/no), whether the tooth was within the priority referral criteria of the service (yes/no). Treatment issues included date of onset and completion of the endodontic treatment, teeth groups treated (front, premolar and molar; upper and lower), endodontic technique used (manual, rotary, mixed), number of sessions to complete the treatment (1, 2, 3 or more), intercurrences during the endodontic treatment, patient-related or service-related (yes/no), referral date for restoration of treated tooth, referral site to restore endodontically the treated tooth (BHU, DSC).

After completing the endodontic treatment, information was collected from patients' medical records to complement data on the restorative treatment, such as: where the restorative treatment was/is being performed (BHU, DSC, private clinic), start and end date of restorative treatment, intercurrences during restorative treatment, related to the patient or to the service itself (yes/no) and counter-referral to PHC after restorative treatment (yes/no).

A pilot study was conducted to train endodontists to fill in data in uniform fashion, avoiding losses. Questions with issues were reformulated for the primary study.

The results were analyzed in a descriptive way using Statistical Package for Social Sciences – version 22.0. Quantitative data were analyzed by the Kolmogorov-Smirnov test, and as they did not show a normal distribution ($p < 0.001$), they were identified using percentiles. Categorical data were analyzed by frequency.

The Research Ethics Committees of the Federal University of Minas Gerais (UFMG) and the Municipal Health Department of Belo Horizonte approved the study. The patients were not contacted by the researcher, besides the moment of clarification and signing of the Informed Consent Form.

Results

In total, 466 endodontic treatments were started at the DSC studied during data collection. Of these, 14 were excluded because they were not completed within the data collection period, resulting in a sample of 452 endodontic treatments completed in adult patients.

Patients who underwent endodontic treatment had a median age of 39 years, most were female (69.7%), showed up with PHC's referral order (96.2%) and were mostly referred from the Administration Office's Health Centers of the Northeast of Belo Horizonte (29.2%). Most patients did not have an adequate oral environment (60.4%), showing plaque and calculus, cavities and root residues; however, it was within the service referral priority criteria (SISREG) (84.8%). Yet, even those that were not within the standards of adequacy of environment or priority of referral were attended by endodontists (Table 1).

Table 1. Descriptive analysis of patients referred for endodontic treatment at the DSC, according to gender, regional administration office of origin, presence of referral order, adequacy of the environment and reference criteria for the service. Belo Horizonte, 2016.

Variables	Absolute frequency (N)	Relative frequency (%)
Gender		
Female	315	69.7
Male	137	30.3
Regional administration office of origin*		
Northeast	132	29.2
Northwest	61	13.5
East	58	12.8
West	52	11.5
Barreiro	50	11.2
North	40	8.8
Centre South	32	7.1
Pampulha	25	5.5
Venda Nova	1	0.2
No information	1	0.2
Referral order		
Yes	435	96.2
No	17	3.8
Adequacy of oral environment		
Yes	179	39.6
No	273	60.4
Reference criteria considered		
Yes	383	84.7
No	68	15.1
No information	1	0.2
Total	452	100

*Only valid data.

Most of the endodontic treatments were performed in upper premolars (23.7%), followed by lower molars (22.3%), using a mixed technique (74.1%) and in a single session (64.2% %). The most frequent intercurrences related to endodontic treatments were lack of material (6.9%), followed by inflammatory problems such as a periapical lesion, exudate and edema (6.0%). When evaluating treatment continuity, it was observed that 81.2% of the patients were referred to the DSC and 18.8% were counter-referred to the BHU to perform the restorative treatment (Table 2).

Of the 452 endodontic treatments completed, 109 (24.1%) had their restorative treatment completed (94 in the DSC, 14 in the BHU and 1 in a private clinic), 123 (27.2%) were being treated (118 in the DSC, 2 in the BHU and 3 in private clinics), and 220 (48.7%) had no information on restorative treatment until the end of the data collection period (33.4%; n = 151 referred to the DSC and 15.3%, n = 69 referred to BHU).

The restorative treatment followed the trend shown by reference, where most of the completed and ongoing treatments were or were being performed in the DSC (46.9%). Among the most cited complications during restorative treatment, the need for referral for clinical crown lengthening (3.5%) was highlighted. It was observed that the counter-referral following restorative treatment in the DSC occurred in 58.7% of the cases (Table 3).

The median waiting time for the patient to begin endodontic treatment after the BHU referral for secondary care was five months. When the median time to perform the endodontic treatment and the referral to the restorative treatment was considered, it was zero days, that is, in 50% of the cases, the patient started and finished the same day (single session), and on the same day that the endodontic treatment was completed, the patient was referred to restorative treatment. After referral to the restorative treatment, the patient waited a median of 57 days to be attended, and this treatment had a median duration of 17 days (Table 4).

Discussion

The development of dental caries is the most common cause of indication for endodontic treatment. Often patients requiring endodontic treatment go through painful situations and report a search for recurrent urgency treatments and wait for specialized care[15]. Thus, endodontic treatment is considered a safe way to keep teeth that otherwise would be extracted from the arch. The success rate of these treatments reaches 95% and the lack of pain, edema, fistula, periodontal impairment, and radiographic image of periapical normality are considered indicative of cure[16].

Mostly women participated in this study (69.7%) and this is a well-documented fact in the literature[17,18]. In addition to other known factors, the existence of specific programs for women

Table 2. Descriptive analysis of patients referred for endodontic treatment in the DSC according to the type of tooth treated, instrumentation technique used, number of sessions used, intercurrences, place of referral for restorative treatment. Belo Horizonte, 2016.

Variables*	Absolute frequency (N)	Relative frequency (%)
Groups of teeth		
Front		
Upper	87	19.2
Lower	23	5.1
Premolar		
Upper	107	23.7
Lower	59	13.1
Molar		
Upper	75	16.6
Lower	101	22.3
Treatment technique used		
Manual	110	24.4
Rotary	5	1.1
Mixed	335	74.1
No information	2	0.4
Number of endodontic treatment sessions		
One	290	64.1
Two	149	33.0
Three or more	13	2.9
Intercurrences		
Yes*	129	28.5
No	323	71.5
Patient referred to restorative treatment		
BHU	85	18.8
DSC	367	81.2
Total	452	100

* Lack of material, return with tooth without coronary sealing; difficulties during endodontic treatment (access, isolation, anesthesia, gingival and/or canal hemorrhage, small opening of the patient's mouth and vomiting); need for periapical surgery; defective X-ray apparatus, presence of leukoplakia in the palate; short work time and trauma.

Table 3. Descriptive analysis of the patients referred for endodontic treatment at the DSC, according to the place of restorative treatment, restorative treatment situation, intercurrences, counter-referral. Belo Horizonte, 2016.

Variables	Absolute frequency (N)	Relative frequency (%)
Restorative treatment situation		
Finalized	109	24.1
Under treatment	123	27.2
No information – BHU	69	15.3
No information – DSC	151	33.4
Place of performed or ongoing treatment		
BHU	16	3.5
DSC	212	46.9
Private clinic*	4	0.9
No information – BHU	69	15.3
No information – DSC	151	33.4
Intercurrences		
Yes**	73	16.2
No	379	83.8
Was the patient counter-referred after restorative treatment?***		
Yes	64	58.7
No	15	13.8
No information****	30	27.5
Total	452	100

* These post-endodontic treatment cases were referred to perform the restorative treatment at the DSC. However, patients chose to perform treatment in a private clinic. ** The patient did not accept metallic restoration on the tooth; change of prosthesis laboratory; temporary discarded by the patient; atypical preparation using two schedules; lack of adequacy of the oral environment; gingival bleeding. *** Data refer only to cases with finalized restorative treatment (n = 109). **** They apply to cases that were being restored at the DSC.

such as prenatal care or the prevention of cancer (cervical and breast) can facilitate women's approach to health services[19].

Most of the referrals came from the Northeast Regional (almost 30%). Referrals are made according to the number of existing vacancies, and there are no quotas established for the Health Regional Administration Offices. This is the largest DSC of the municipality, operating in two different locations. This regional office may have a higher demand for endodontic treatment or greater facility of entering names of people in the electronic waiting list of the SISREG. For a user to be referred from BHU to specialized care, a BHU employee must insert the patient's name into the electronic record of SISREG[13]. Thus, the way management is done in the service can con-

Table 4. Descriptive analysis of patients referred for endodontic treatment at the DSC, according to the waiting time and duration of endodontic and restorative treatments. Belo Horizonte, 2016.

Variables	Percentiles		
	25%	50%	75%
Waiting time for onset of endodontic treatment for BHU referral (months)	3.23	4.98	7.32
Duration of endodontic treatment (days)	0.0	0.0	41.0
Time between end of endodontic treatment and referral of restorative treatment (days)	0.0	0.0	0.0
Wait time after referral for initiation of restorative treatment (days)	23.0	57.0	74.0
Duration of restorative treatment (days)	0.0	16.5	30.0

tribute to a greater or lesser volume of referrals to specialized care.

One positive finding was that 96.2% of the cases referred to the secondary endodontic care in the study period had a BHU referral order to the DSC. This is an indicator that the medical appointment system works properly[17]. Moreover, the well-regulated system contributes to equity[12], since personal factors or other interests appear not to be interfering with this process.

Referral to endodontic treatment performed by SISREG follows priorities and criteria stipulated by the Municipal Health Secretariat[13]. In this study, 60.4% of the individuals did not show up with the adequate oral environment, and of the referrals made, 84.9% were within the priority criteria established by the service. However, even patients who were referred and who did not meet the adequate environment criteria and referral priority were included in the care. This can lead to interference in the planning and work overload in specialized services, such as performing procedures that must be done in the PHC (adequate environment). The difficulty of refusing a patient who has already moved to the service is real. Rules are often broken, either by a humanized professional stance or to avoid the stress of denial at the time of care.

The requirement of adequate oral environment before referral to specialized services evidences issues that transcend the interference in the organization of services, as this procedure leads to a decreased number of microorganisms in the oral cavity. The adequate oral environment should be performed in the PHC so that the user is referred to the DSC with a controlled oral disease activity. Procedures that reduce the level of infection in the oral cavity, such as those recommended[20], are essential before the onset of endodontic treatment.

In this study, the most endodontically treated teeth were the maxillary premolars, followed by lower mandibular molars. Considering groups of teeth (front and back), about 75% of the treated teeth were back teeth (36.8% premolars, 38.9% molars). Evaluating radiographs used in dental treatments, Hollanda et al.[21] found similar results. In 6,313 endodontically treated teeth, 70.4% were back teeth, and 40.4% were premolars and 30% molars.

The high priority of SISREG for performing endodontic treatment is for front teeth and premolars or molars when there is no dental loss in the arch where the tooth to be treated is located. These data suggest a new discussion about the established priorities, especially considering that back teeth are the most frequent indication for endodontics[21] and are fundamental for the maintenance of chewing functionality. Especially about premolars, in the case of premature molar loss, care should be taken to ensure masticatory capacity, at least through the reduced dental arch, avoiding the need for a prosthesis. The reduced dental arch[22] is a consequence of the loss of one or more molars and may provide minimal chewing using the remaining front and premolar teeth.

In general, patients referred from primary care to specialized endodontic treatment had a median waiting time of 5 months (P25%=3.23; Md=4.98, P75%=7.32). Other studies have found a shorter waiting time, around 30 days for a specialized service visit, including endodontics[17,23,24]. It is important to emphasize that, in this study, calculation of endodontic treatment waiting time considered the date of the referral order of the BHU to DSC and the day of onset of the endodontic treatment, unlike other studies[17,23,24] that used reports of patients and service professionals to estimate the waiting time for specialized treatment.

Evaluating the perception of the users about the endodontic treatment performed in public health services, Melgaço-Costa et al.[25] found that patients consider the 3-4 months waiting

time to be months long, especially when there is evidence of pain. A 5-month waiting period for endodontic treatment, as found in this study, can generate several negative consequences, such as the patient's constant search for urgent treatments for pain relief[17], overloading PHC with this demand, as well as a possible fracture of the dental element and patient treatment abandonment. These last two factors can result in dental element extraction.

The possibility of single-session endodontic treatments increased[26-29] with the advent of technological resources, such as apical locators and nickel-titanium rotary files. In general, procedures were finalized in a single session, and using a mixed instrumentation technique (manual and rotary).

The option of performing endodontic treatment in one or more sessions is independent of the presence or absence of periapical lesion or pulp necrosis. This is a clinical decision and depends on case choice, tooth conditions, time available to perform the necessary steps, professional's mastery and limitations of the patient such as medical history and anatomical considerations[26-29].

Multiple sessions have not shown a reduced incidence of postoperative pain about the single session, which confirms the safety of single-session endodontic treatment[26,27]. Exceptions are cases involving the presence of an acute abscess, which may require more than one session[26-29].

Another benefit of the single-session treatment is the best cost-benefit ratio for both the patient and the dentist[16,28], or in this case for the public service. Single-session endodontic treatment means less spending on consumables[28] and fewer patient trips and work-related absences to complete this procedure. Also, completion of endodontic treatment in a single session leads to streamlined human resources, which in turn enables users' increased access since more patients can be attended to when the number of sessions to treat a single patient is reduced.

As observed in this study, technology and knowledge should be used to increase service effectiveness. However, the professional's experience cannot be disregarded, as it usually results in a faster preparation and with fewer procedural errors, such as instrument fracture and steps formation[30], reducing treatment time. Endodontists working for the DSC under study have been working there for more than ten years, which may have facilitated the short time of endodontic treatment observed.

Performing single-session endodontic treatment, when possible, is the first-choice approach at the South-Central DSC. If the endodontist requires a new session, the date of return for endodontic treatment is left at the discretion of DSC's administration. Thus, although 50% of the endodontic treatments were performed in a single day, some cases took up to 41 days (P75%). This delay is because scheduling is out of the endodontist's hands.

As intercurrences during endodontic treatment, the endodontists cited lack of material and problems in the treatment itself (anatomy of the root canal system, necessary intermediate procedures, and others). The lack of material in health services is a serious problem that can compromise their efficiency and quality. Prioritization of other sectors to the detriment of oral health, with reduced resources, may lead to declining production of dental services[31]. Other cited complications, such as problems of inflammatory origin and anatomy of the root canal system are unpredictable but may hamper or even compromise the success of endodontic treatment.

Among the intermediary procedures, mentioned were increased clinical crown, which reestablishes the biological space to ensure the health of periodontal tissues, facilitating the use of staples for total isolation in endodontic treatment and teeth preservation[32]. A better interrelationship between primary and secondary care could assist in this issue. Furthermore, an adequate dialogue between specialties such as endodontics, periodontics and prosthesis facilitates the patient's adequate referral and the combined agenda can shorten the waiting time for a given treatment.

Of the 452 patients who had completed endodontic treatment at the DSC, 81.2% were referred for restorative treatment in the DSC and 18.8% in the original BHU, indicating direct restoration, as recommended by the Municipal Health Secretariat of Belo Horizonte, with a counter-referral order of the endodontist who performed the procedure. This data shows that 81.2% of the teeth with endodontic treatment required a complex restoration, probably because of the masticatory effort to which they are submitted or because they evidenced a highly compromised structure[33].

Up to the end of data collection, 109 patients had restored their tooth (24.1%), 123 were under treatment (27.2%), that is, a treatment resolution expectancy (endodontic and restorative) of 51.3% as a whole. However, 48.7% of the cases

had no information on whether restorative treatment had been initiated or not, whether because of lack of data in the patient's medical records about restorative treatment referred to the DSC itself (33.4%), or in the case of patients referred to BHU for restorative treatment (15.3%), or due to the lack of information, even after several attempts to obtain information by telephone or e-mail. This difficult access to information between PHC and specialized service denotes the need for a better communication interface between these two levels of care, considering that they must function in a network, ensuring comprehensive care[12].

The favorable outcome of endodontically treated teeth occurs when it is once again part of the occlusion of patients, and their masticatory function is restored. This can only occur when final restoration is performed in the shortest possible time so that dental elements are preserved[34].

Most restorative treatments were or were being performed at the DSC (46.9%) and, in general, the patient was referred for restorative treatment on the same day of endodontic treatment completion. Waiting time for the start of this stage of treatment was almost two months (M_d = 57 days). Probably some procedures accounted for as "no information" were still waiting after the data collection was completed.

After onset, the restorative treatment had an approximate duration of 17-30 days (M_d = 17; P75% = 30 days), which may mean more absences from work and more transportation expenses. Excluding BHU referrals from the South-Central Administrative Office, all of them make a trip from their homes with a minimum cost of around 8-16 Brazilian real (official currency of Brazil), the same as 2.15-4.30 US dollar, in each consultation.

Of the 109 patients, 64 (58.7%) who completed the restorative treatment at the DSC received the counter-referral order to visit the BHU. Cases that were not counter-referred refer to patients who had already been counter-referred to the BHU, after the endodontic treatment, to perform the restorative treatment (n = 14) and the case that performed the restorative treatment in a private clinic (n = 1). The latter case, since it had been referenced to perform the restorative treatment at the DSC and chose to perform the procedure out of the system ended up not being counter-referred to the BHU. It is important to note that 30 cases (27.5%) that completed the restorative treatment at the DSC did not have information on whether the counter-referral to BHU had occurred or not. This is a much lower number than expected when we consider that the operation of the service depends on an adequate flow of referrals and counter-referrals[12,35]. At this moment, integration is broken, and the PHC professional who is the caregiver of that patient loses information for continuity. Professionals and patients should be aware of this importance. Referral and counter-referral protocols are documents that must be thoroughly used to ensure service efficiency and effectiveness. The high demand for PHC services and a shortage of vacancies at the DSC are complicating factors in the interface of network services[15].

The lack of patients between consultations was also cited. Multiple treatment sessions promote frequent trips and expenses, as well as patient's absence from work. Furthermore, technical problems that require repetition of prosthetic work increase the possibility of absenteeism. The time spent during treatment should consider absenteeism. Outpatient absenteeism is a cause of loss of the consultation for other users, causing administrative and financial issues, and are a cause of increased waiting lists. This can be solved through multi-professional work. Managers should develop methods of control of patients attended to curb expenses and increase initiated treatments' completion[36-38].

Many patients are not warned about the scheduling day and do not know when they are due for the specialized procedure, leading to the patients losing their spots due to communication failure, inclusion of people who had not been referred or even users' duplicated scheduling[24]. Thus, one must take into account the use of communication tools that can be understood by users. They should be clarified so that they are not afraid to cancel their consultations that they are unable to attend[23,36-38].

This study has limitations that should be considered. The place chosen for the study is the largest and oldest DSC in Belo Horizonte. As the regulation is the same throughout the municipality, it is considered that the results will be similar in many respects.

The integrality of services provided is still a challenge for the public health system. In the case of teeth treated endodontically, they will only have their function effectively reestablished in the oral cavity when the restorative treatment is completed. Also of great importance is the patient's return to primary care for continued treatment and maintenance of their oral health. Thus, it is necessary to jointly plan the dental treatment

between primary and secondary care and, within the latter, between specialties, to ensure the integrality of care. An adequate referral and counter-referral process is also essential to ensure service efficiency and effectiveness. Improving communication between service and patients so that they attend the consultations and finalize their treatment in a shorter time is crucial, as it results in lower expenses for both and greater possibility of scheduling new consultations.

Collaborations

MBP Magalhães, EF Ferreira, RC Martins participated in all stages of research and drafting of the manuscript. DV Oliveira (Scientific Initiation ADRC/PRPq/UFMG), RF Lima (Voluntary Scientific Initiation PRPq/UFMG) participated in the collection, analysis and interpretation of the results.

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