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Evaluation of managers' perspectives on secondary dental care in Endodontic in Minas Gerais, Brazil

Avaliação da percepção dos gestores na atenção secundária em endodontia em Minas Gerais, Brasil

Evaluación de las perspectivas de los gerentes sobre la atención odontológica secundaria en endodoncia en Minas Gerais, Brasil

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Abstract

The aim of this study was to evaluate the perceptions of Municipal Oral Health Coordinators (MOHCs) of endodontic services in Dental Specialty Centers (DSCs) of Minas Gerais, Brazil. A questionnaire was sent to the MOHCs of municipalities that had DSCs. Endodontic productivity data were collected from the Health System database. Descriptive analysis and Spearman's correlation were performed ($p \leq 0.05$). Most cities had one DSC operating (92.4%) with two endodontists (30.3%). Endodontic treatments (ETs) were performed exclusively in a DSC (87.9%). There were referral protocols for primary to secondary care in endodontics in 87.9%. Most of the DSCs had a target (84.8%); 60.6% followed the targets recommended by the Brazilian Ministry of Health (MofH), but 53.0% complied with the goal in less than 25% of the months. Technological auxiliary resources for endodontics were not present in 42.0% of the DSCs. Positive correlation was found between the number of dentists who performed ETs in DSCs with fulfillment of monthly targets ($p=0.029$), and a negative correlation between the availability of technological resources for the fulfillment of monthly targets ($p=0.012$). Some MOHCs were unaware of the principles of the MofH, suggesting that management measures and targets should be reevaluated.

Keywords: Health services research; Dental health services; Secondary care; Endodontics; Institutional management teams.

Resumo

O objetivo deste estudo foi avaliar a percepção dos Gestores Municipais de Saúde Bucal (GMSB) sobre o atendimento endodôntico nos Centros de Especialidades Odontológicas (CEO) de Minas Gerais, Brasil. Foi enviado um questionário aos GMSB dos municípios que possuíam CEO. Os dados de produtividade endodôntica foram coletados do banco de dados do Sistema de Saúde. Foi realizada análise descritiva e correlação de Spearman ($p \leq 0,05$). A maioria dos municípios possuía um CEO em funcionamento (92,4%) com dois endodontistas (30,3%). Os tratamentos endodônticos (TEs) foram realizados exclusivamente no CEO (87,9%). Houve protocolos de encaminhamento da atenção primária para secundária em endodontia em 87,9%. A maioria dos CEOs tinha meta (84,8%); 60,6% seguiram as metas preconizadas pelo Ministério da Saúde (MS), mas 53,0% cumpriram a meta em menos de 25% dos meses. Recursos tecnológicos auxiliares para endodontia não estavam presentes em 42,0% dos CEOs. Encontrou-se correlação positiva entre o número de cirurgiões-dentistas que realizavam TE em CEOs com cumprimento de metas mensais ($p=0,029$) e negativa entre a disponibilidade de recursos tecnológicos para cumprimento de metas mensais ($p=0,012$). Alguns GMSB desconheciam os princípios do MS, sugerindo que as medidas e metas de gestão deveriam ser reavaliadas.

Palavras-chave: Pesquisa em serviços de saúde; Serviços de saúde bucal; Atenção secundária; Endodontia; Equipes de gestão institucional.

Resumen
El objetivo de este estudio fue evaluar las percepciones de los Coordinadores Municipales de Salud Bucal (CMSB) de los servicios de endodoncia en los Centros de Especialidades Dentales (CED) de Minas Gerais, Brasil. Se envió un cuestionario a los CMSB de los municipios que tenían CED. Los datos de productividad endodóntica se recopilaron de la base de datos del Sistema de Salud. Se realizó análisis descriptivo y correlación de Spearman ($p \leq 0,05$). La mayoría de las ciudades tenían un CED en funcionamiento (92,4 %) con dos endodoncistas (30,3 %). Los tratamientos de endodoncia (TE) se realizaron exclusivamente en un CED (87,9%). Existían protocolos de derivación de atención primaria a secundaria en endodoncia en el 87,9%. La mayoría de los CED tenían un objetivo (84,8%); El 60,6% siguió las metas recomendadas por el Ministerio de Salud (MS) de Brasil, pero el 53,0% cumplió con la meta en menos del 25% de los meses. Los recursos tecnológicos auxiliares para la endodoncia no estuvieron presentes en el 42,0% de los CED. Se encontró correlación positiva entre el número de odontólogos que realizaron TE en CED con cumplimiento de metas mensuales ($p=0,029$), y correlación negativa entre la disponibilidad de recursos tecnológicos para el cumplimiento de metas mensuales ($p=0,012$). Algunos CMSB desconocían los principios del MS, lo que sugiere que se deben reevaluar las medidas y los objetivos de gestión.
Palabras clave: Investigación en servicios de salud; Servicios de salud dental; Atención secundaria; Endodoncia; Equipos directivos institucionales.

1. Introduction

Evaluating health services is an essential tool of public health. Health services result from a coordinated effort among users, health professionals, and managers, and the context of the relationships among them is important (Bosi et al., 2010). The primary purpose of health management is the decision-making (Melo et al., 2013) and studies (Melo et al., 2013, Leal et al., 2019) in this area, although scarce, are valid because they can generate evaluation indicators of the quality of care.

The Brazilian Unified Health System is based on the principles of health promotion, maintenance, and prevention. The population's access to this system is through primary care and it is organized based on healthcare networks (Junqueira et al., 2008). Secondary dental care, characterized by Dental Specialty Centers (DSCs), is based on the epidemiological profiles of the population, and performs specialized procedures and complementary to primary care. The number of professionals in each specialty depends on the local epidemiological needs (Pedrazzi et al., 2008). DSCs are regionally distributed and are integrated into the healthcare network (Junqueira et al., 2008, Pedrazzi et al., 2008) to ensure the integrality and reduce inequity.

In an effort to monitor the performance of DSCs, the Brazilian Ministry of Health (MofH) has identified minimum output targets for different types of DSCs. DSCs are classified into three types: I (three dental chairs), II (4 to 6 dental chairs), or III (more than 7 dental chairs) and the number of professionals by specialty is variable and depends on the epidemiological needs of each city where the service is implemented (Pedrazzi et al., 2008). The minimum monthly output required for endodontics is 35, 60, and 95 procedures per month for DSC types I, II, and III, respectively, and 20% of the procedures should be endodontic treatments (ETs) or retreatments of multiradicular teeth (Brazil, 2006).

Overall, descriptive studies to evaluate Brazilian secondary oral care involve associations between the outputs of these services with the socio-demographic factors and structural aspects of cities. They reveal that the productivities are low with the worst performances observed in small towns, lower Human Development Index (HDI) (Figueiredo & Goes, 2009; Cortellazzi et al., 2014) and poor structural characteristics of DSC (e.g., type of DSC and accreditation time service) (Figueiredo & Goes, 2009; Celeste et al., 2014; Cortellazzi et al., 2014). Melgaço-Costa et al. (2002) showed that the average monthly productivity in the endodontic services of the DSCs, in Minas Gerais, Brazil, were low and was positively associated only with population size and accredited DSC type.

After policies were implemented to promote the growth of the network of the public service in Brazil, analysis of the DSCs has become necessary (Lino et al., 2014). Considering the need to monitor secondary care and to understand the role of oral health managers, this study evaluated endodontic services provided as secondary care in the DSCs of the state of Minas

Gerais (MG), Brazil, from the perspective of the municipal oral health coordinators (MOHCs) of the municipalities where they were deployed.

2. Methodology

This cross-sectional study was approved by the Human Research Ethics Committee of Universidade Federal de Minas Gerais, Brazil (Protocol CAAE- 34771514.0.00005149).

A self-administered questionnaire consisting of 14 open-ended and closed-ended questions was administered, in 2015, to the Municipal Oral Health Coordinators (MOHCs) of the municipalities of Minas Gerais (MG) that had Dental Specialty Centers (DSCs). It consisted of questions on the managers' education and time in their office; organization of endodontics services offered in the cities (number of DSC in operation and registered in the Ministry of Health – MofH, number of dentists who performed endodontic treatments (ETs) in the DSCs, organization of the demand for ETs in the secondary care, referral and counter-referral protocols in Endodontics from primary to secondary care in the DSCs analyzed, priorities to the assistance of patients with ET needs); and productivity targets to be reached (rules followed and reasons for non-compliance), interface between primary/secondary care (waiting time for ET), unmet demands in the system, integrality, and available technological resources (apical electronic locators, devices for rotatory instrumentation, devices for thermoplastification).

A pilot study (test-retest model) was conducted to 11 ex-managers (15% of the total sample) to assess variations from the same respondent at different times. Fifteen days after the first administration, the same questionnaire was administered a second time. Agreement between responses was measured with a weighted kappa coefficient, using the QuickCalcs program (GraphPad Software Inc., San Diego, CA, USA) and the mean value was 0.834.

After the pilot study, all MOHCs of the municipalities of MG that had DSCs received a telephone call, and the objectives of the research were explained. MOHCs that agreed to participate received an e-mail message that included a return receipt to the main investigator, instructions for filling out the questionnaire, self-administered questionnaire and written informed consent form. The MOHCs who did not answer the questionnaire were contacted periodically for a period of four months until a response was obtained.

Secondary care data on the endodontic practices of accredited DSCs in MG that were fully functioning in 2014 were evaluated, because it is an important variable for the management of health services in dental specialty centers. Based on the MG State Health Department's database (Minas Gerais, 2014), inclusion criteria on the DSCs accredited by the MofH until December 2013 that were in operation and whose MOHCs answered the questionnaire were used, with available output from the Department of Informatics of SUS database (DATASUS) in 2014.

The search for secondary data regarding the output of ETs in 2014, at each DSC, was performed by a single researcher trained to work with the DATASUS system. This system shows only the output per month without noting the number of professionals who have worked to achieve these results.

The output of ETs were analyzed by considering the targets to be reached for each type of DSC (Brazil, 2006). Assessment considered the number of months available for analysis of the DATASUS system and determined the fulfillment of monthly targets in 2014. Based on these data, the target of productivity reached for each type of DSC was categorized as the target reached in 0% to 25%, 26% to 50%, 51% to 75%, or 76% to 100% of the available months. This study was based on Figueiredo and Goes (2009), but adjusted accordingly the dependent and independent variables.

Statistical analysis was performed using IBM SPSS Statistics for Windows, version 19.0 (IBM Corp., Armonk, NY). Descriptive statistics were obtained for all variables. The distribution of the resulting data was carried out (Kolmogorov-Smirnov test), and the absence of a normal distribution ($p<0.001$) indicated that the Spearman's correlation test was to be used

(p>0.05). Correlation between fulfillment of monthly targets by the DSCs was analyzed by analyzing the following variables: number of endodontists who performed ETs in the DSCs and in units outside of the DSCs, available technological resources, and waiting time to start ET in a DSC (p<0.05).

3. Results

In total, 76 Dental Specialty Centers (DSCs) of Minas Gerais (MG) were eligible (23 type I DSCs, 50 type II DSCs, and only 3 type III DSCs) distributed throughout 70 municipalities. Sample consisted of 70 Municipal Oral Health Coordinators (MOHCs), and a 94.29% rate of return for the questionnaires was achieved (final sample = 66 managers).

More than half of the MOHCs (53.0%) had been in the manager's post for more than 2 years, 18.2% for 1-2 years, and 28.8% for less than one year. Most of the MOHCs had degrees in dentistry (89.4%), with 4.5% in nursing and 6.1% in other areas.

In most of the evaluated cities, there was only one DSC in operation (92.4%), and 90.9% of them were registered in the Ministry of Health (MofH). The number of dentists who performed endodontic treatments (ETs) in the analyzed DSCs, according to the MOHCs reports, was 01 in 24.2%, 02 in 30.3%, 03 in 25.8%, 04 in 9.1%, and 05 or more in 10.6% of the DSCs.

Table 1 shows the organization of demand for ETs in the secondary care in MG, according to the MOHCs reports. Most of the ETs was performed exclusively in DSCs (87.9%), and among those performed outside of the DSCs, 9.1% were performed at primary care. Furthermore, 69.7% of the DSCs provided endodontic services to other municipalities, with 59.1% of them being from municipalities of the same health microregion.

Table 1 – Organization of the demand for ETs in the secondary care in MG, Brazil (2014), according to the MOHCs (n=66).

Variables	Absolute frequency (n)	Relative frequency (%)
ETs performed in public health units		
Are ETs performed in public health units other than the DSC in your municipality?		
No	58	87.9
Yes*	08	12.1
*Description of the other units**		
Primary care	06	9.1
Educational institution	01	1.5
Syndicate	01	1.5
*Number of dentists in the other units**		
One	04	6.1
Two or more	03	4.5
No answer	01	1.5
Characterization of the referral demand for ET		
Does the DSC of your municipality have referral demands for ET from another municipality?		
No	20	30.3
Yes*	46	69.7
*Description of the Municipalities**		
From the same health microregion	39	59.1
From 2 or more health microregions	02	3.0
No answer	05	7.6

*Managers who answered "Yes". Source: Authors.

Table 2 shows that in 87.9% of the cities primary care workers followed a protocol for referring ET to DSCs. The services in 37.9% of the cities had their own municipal protocol, and those in 34.8% of the cities followed the protocol

recommended by the MofH. Furthermore, most of the DSCs (65.2%) had a protocol for prioritizing assistance. Combinations of priorities (27.3%) predominated, although specific tooth types (traumatized, anterior, or posterior) or clinical status had been cited (22.8%). After the conclusion of the ET in the DSCs, only 50.0% of the patients were counter-referred to primary care.

Table 2 – Referral and counter-referral protocols in Endodontics from primary to secondary care in the DSCs analyzed in MG, Brazil (2014), according to the MOHCs (n=66).

Variables	Absolute frequency (n)	Relative frequency (%)
Do you follow any type of protocol used in primary care when referring patients with ET needs to the DSC of your municipality?		
No	08	12.1
Yes*	58	87.9
*What is the protocol?**		
Protocol recommended by the MofH	23	34.8
Own municipal protocol	25	37.9
No answer	10	15.2
Do you prioritize the assistance of patients (with ET needs) who are referred by primary care to the DSC of your municipality?		
No	20	30.3
Did not know	2	3.0
No answer	1	1.5
Yes**	43	65.2
*What are the priorities?***		
Systemic conditions	2	3.0
Patients with special needs	2	3.0
Type of tooth or clinical status	15	22.8
Age	5	7.6
Combination of priorities	18	27.3
No answer	1	1.5
After the conclusion of the ET in the DSC, where were the patients countrreferred for treatment continuity?		
Primary care	33	50.0
Continuity in the DSC	9	13.7
Another service	8	12.1
Associations of previous reasons	14	21.2
MOHC did not know inform	2	3.0

*Managers who answered “Yes” to use of the protocol. **Managers who answered “Yes” to priorities the assistance. Souce: Authors.

Most of the DSCs (84.8%) had some target to be fulfilled. Table 3 shows that among the managers who cited a target, 60.6% followed the targets recommended by the MofH, and 53.0% reached the targets. Among the 28.8% of the DSCs that did not reach their targets, no main reason for noncompliance was found; rather, multiple factors (16.8%) were involved.

Table 3 – Description of the output targets for DSCs analyzed in MG, Brazil (2014), according to the MOHCs (n=56).

Variables	Absolute frequency (n)	Relative frequency (%)
What are the targets for dentists who perform ETs in the DSC of your municipality?		
Recommended by the MofH	40	60.6
Others	11	16.6
No answer	5	7.6
Were the targets reached?		
Yes	35	53.0
No	19	28.8
Do not know	2	3.0
Why were the targets not reached?		
Low output	2	3.0
Absenteeism	2	3.0
Lack of materials	2	3.0
High output targets	2	3.0
Multiple reasons*	11	16.8

* wrong referencing, technical and anatomical difficulties in performing TE. Source: Authors.

In 50.0% of the analyzed DSCs, the waiting time for ET was 1–6 months when patients were referred from primary to secondary care. The waiting time in other DSCs was less than one month (16.7%), between 7–12 months (10.6%), or more than one year (18.2%). In addition, in 1.5% of the cases, the MOHCs did not have the information, and those in 1.5% of the cities did not answer.

Most of the MOHCs stated that some auxiliary technological resources were available in their DSC: apical electronic locators (27.3%), devices for rotatory instrumentation (1.5%), devices for thermoplastification (1.5%), and the combined use of more than one device (27.3%). 42.4% of the managers cited that there were no auxiliary devices in their DSC.

The analysis of the fulfillment of monthly targets in each DSC in 2014 showed that most of the DSCs did not reach the target established by the MofH: 53.0% of the DSCs complied with the goal in less than 25% of the months available for analysis, 19.7% complied with the targets in 26–50%, 15.2% complied in 51-75%, and 12.1% complied in 76–100% of the months available for analysis.

Table 4 presents statistically significant positive correlation between the number of dentists who performed ETs in the analyzed DSCs and the fulfillment of monthly targets (p=0.029); and a statistically significant negative correlation between available technological resource reports and the fulfillment of monthly targets (p=0.012).

Table 4 - Correlation between the fulfillment of targets of the DSCs analyzed in MG, Brazil, in 2014, (n=66), and the characteristics of secondary care according to the MOHCs.

Characteristics of secondary care	Fulfillment of monthly targets [2,**]	
	Spearman coefficient (r_s)	p-value
Number of endodontists working in DSCs[1]	0.268	0.029*
Number of endodontists working outside DSCs[1]	- 0.354	0.437
Available technological resource reports[1]	- 0.308	0.012*
Waiting time[1]	- 0.057	0.656

*Statistical significance (p<0.05); [1]categorical variable; [2]quantitative variable. **Source: DATASUS. Source: Authors.

4. Discussion

This study, as well as that reported by Leal et al. (2019), showed that Municipal Oral Health Coordinators (MOHCs) have work history of over two years in office and degree in dentistry. Melo et al. (2013) found a median governance time of 3.62. One of the management problems in public service is the high turnover of professionals, which harms the longitudinality of healthcare (Gonaçalves et al., 2014). Human resources are an overriding element to achieving good performance as they are trained to act as protagonists and manage resources (Donabedian, 1997; Gonçalves et al., 2014).

Regarding the managers' educational profiles, one study (Melo et al., 2013) found that the course of administration had the highest prevalence, which was different from the present findings. In an ideal scenario, the manager knows the clinical practice of the health service, has a degree in dentistry, and is knowledgeable in the area of public management (Leal et al., 2019). Another study (Aquilante & Aciole, 2015a) also found a similar manager profile, where almost all municipalities were managed by dentists, of which 27.8% had postgraduate degrees in public health or related areas. Moreover, there is still no law in Brazil that consolidates the profiles for management positions in Brazilian Unified Health System, problematizing the operation of the system (Melo et al., 2013, Leal et al., 2019). This reality points to the need for curricular reforms, since the social construction of the dentist as a liberal professional is still quite strong (Aquilante & Aciole, 2015a).

Most of the analyzed cities had only one operating Dental Specialty Centers (DSC), and a few of them were operating with no registration in the Ministry of Health (MofH). In this study, the number of operating DSCs in Minas Gerais (MG) is very small and the eligible MOHCs were distributed over 8.2% of the state's municipalities, demonstrating that some regions have a concentration of DSCs in contrast to the assistance gaps in others (Lino et al., 2014). These data compromise the integrality of care and hinder the conformation of network assistance (Machado et al., 2015).

Considering the number of dentists who performed endodontic treatments (ETs) in DSCs, most of the MOHCs reported that there were 2 dentists in each DSC to perform these procedures, which is consistent with the local epidemiological needs (Pedrazzi et la., 2008). Knowledge of the epidemiological profile is essential in the organization of a healthcare system (Junqueira et al., 2008), and it has been the focus of national epidemiological surveys, which have indicated a serious need for oral healthcare in Brazil and MG (Martins et al., 2016).

Epidemiological researchs in Brazil (Pedrazzi et al., 2008) highlighed the severity of the oral health situation and also the precocity of dental loss, as well as the inequality prevailing in the access to dental services, which is the reality of the totally edentulous elderly. The ETs contribute to the maintenance of dental elements, while the extraction mutilates. Thus, it is important to evaluate the secondary care service in endodontics, as is the case in the present study.

The output of ETs in other public health units that were not a DSC was reported. The execution of these procedures in primary care compromises the healthcare in these units (Celeste et al., 2014). Integration of the supply and fulfillment of services to the population at the interface of primary/secondary care has been discussed at the national and international levels (Morris & Burke, 2001; Gonçalves et al., 2014) through initiatives to strengthen primary care (Machado et al., 2015). Thus, carrying out specialized procedures in primary care is outside the aim of this care, thus requiring management actions.

The demand for referral assistance for ETs from other cities to the analyzed DSCs was high and most of this referral demand originated in the cities from the same health microregion as that of the DSC. However, DSCs that offer healthcare to the population outside their assigned area must be structurally prepared to meet this demand without compromising care (Donabedian, 1997). In this study, despite a high percentage of referrals from other cities, repressed demand for ETs was high, and the waiting time for ET reached up to 6 months in 50.0% of the cities. Therefore, expanding the endodontic services in these cities may impact the quality of care, justifying that the way management is conducted can contribute to the volume of referrals to specialized care (Magalhães et al., 2016).

Most of the DSCs followed a specific protocol (municipal or MofH) for primary care referrals of ETs to the DSC. It is imperative for clinical organizations to follow protocols and to organize the flow for the referral and counter-referral of primary to secondary care (Brazil, 2008). However, the low percentages of DSCs following the MofH protocol denotes a disconnect between the municipal and national management policies related to the organization of secondary care. The establishment of a healthcare network allows for a proper primary/secondary care interface to form and would be an important factor to strengthen DSCs materializing the integrality of care (Machado et al., 2015). Municipalities of MG are in different stages of the implementation of their oral healthcare network and are still with fragmented services.

The results demonstrated that most of the DSCs had one list of priorities for endodontics, according to the MofH. However, criteria and priorities should not be permanent rules and should be reviewed periodically. The severity of the problem or the suffering of the patient should be a priority. Furthermore, some groups should be considered a priority and are supported by the MofH guidelines, as observed in the present study: pregnant women, patients with special needs, with systemic conditions and dental trauma (Brazil. 2008).

After the conclusion of ET in the analyzed DSCs, only half of the patients were counter-referred to primary care, which is a low rate. ET is an intermediary procedure and has no end in itself. Once treatment is completed, the tooth must be fully restored to ensure integrality (Magalhães et al., 2019). Well-regulated systems contribute to the equity of care (Morris & Burke, 2001).

Concerning the output targets to be achieved in the DSCs, according to MOHCs, most of the centers had a target to be fulfilled based on the rules of the MofH. However, some MOHCs responded that in the DSCs of their cities, there were no output targets, demonstrating lack of knowledge and noncompliance with the ministerial rules of DSC productivity assessments (Brazil, 2006), thus confirming that some managers do not understand SUS guidelines, the referral system, and the attributions of healthcare levels (Melo et al., 2013). MOHCs have the responsibility to organize your oral healthcare services as well as provide guidance to their team in compliance to SUS principles (Leal et al., 2019).

MOHCs reported that most of the DSCs achieved the output targets, and for those which did not achieve their targets, more than one main reason for noncompliance was provided. However, previous studies have found opposite results, indicating difficulty in complying with these goals (Lino et al., 2014, Cortellazzi et al., 2014). One evaluation at national level (Cortellazzi et al., 2014) found lower target compliance rate for endodontics (22.6%), while one study in MG (Lino et al., 2014) showed that there was low number of procedures in endodontics (16.8%) in the evaluated DSCs and that approximately 77.0% of the municipalities had a zero rate of endodontic procedures. Therefore, targets and their criteria should be periodically reviewed to limit the direct control of the managers.

The formative assessment of performances in this study showed that most of the DSCs did not reach the monthly targets established by the MofH, and that 53.0% of the DSCs achieved output targets in fewer than 25% of the months available for analysis, which is a very low productivity rate, which is in accordance with other studies (Lino et al., 2014; Cortellazzi et al., 2014), but in conflict with the MOHCs' reports.

In this study, no one reason explains the noncompliance with targets; rather, there are several associated reasons. A critical point in relation to the targets set by the MofH is the power that each service has to direct the production (Lino et al., 2014). MofH also emphasized that the criteria for achieving the targets are restrictive, since they take into account only the completed ETs (Cortellazzi et al., 2014) and since there may be unforeseen dental fractures, loss of tooth, or abandonment of treatment. Furthermore, lack of material in health services is a serious problem, since prioritization of other sectors to the detriment of oral health may lead to a decline in the production (Volpato & Scatena, 2006). Therefore, it is crucial to maintain a permanent evaluation to the redesign of strategies.

Half of the managers indicated that the waiting times to begin ET for patients referred to secondary care were 1-6 months. Two studies have found a shorter waiting time: 30 days (Martins et al., 2016) or up to 5 months (Magalhães et al., 2019), while another indicated 2 years (Aquilante & Aciole, 2015b). These long waiting times compromise the continuity of care and cause patients to be more vulnerable to urgent treatments, overloading primary healthcare (Machado et al., 2015; Aquilante & Aciole, 2015b; Magalhães et al., 2019). Thus, a good response capacity for primary care can reduce the long waiting lists (Chaves et al., 2012), since it has the function of filtering inappropriate demands (Morris & Burke, 2001).

In terms of access to healthcare, the incorporation of new technologies in specialized care is an alternative to solve problems of low productivity (Sanchez & Ciconelli, 2012), since technological advances have been linked to an increased capacity to perform more dental services per unit time (Beazoglou et al., 2002). However, a greater supply of health services may not necessarily indicate greater use (Guay, 2004). The present study showed that most MOHCs conveyed that at least one technological resource should be available in endodontics in their DSCs; nevertheless, output rates were very low, as previously discussed. Here, the analysis confirmed these data, demonstrating statistical significance and a negative correlation between available technological resource reports and the fulfillment of monthly targets: increased achievement target rates have been correlated with small number of devices available in DSCs. Thus, professional experience should not be disregarded, as it is closely related to faster preparation, thus reducing treatment time, even in the absence of technological resources (Magalhães et al., 2019).

Furthermore, a statistically significant positive correlation was found between the number of endodontists who performed ETs in DSCs and the fulfillment of monthly targets, demonstrating that what influenced the achievement of output targets was the number of endodontists. This result is probably due to the experience of professionals who were able to perform under the conditions of the service, even without sufficient available technology, because of their clinical skills (Celeste et al., 2014; Magalhães et al., 2019), in agreement with the pillar of assessment of quality of care, which points out that the structures (human resources, materials, and equipment) have impact on process indicators, which can increase the likelihood of a favorable outcome (Donabedian, 1997).

The present study has an unprecedented character of evaluation of secondary oral care management, specifically for endodontics. The use of official databases will be useful as subsidies for planning public policies and the results proved to be valid for the evaluated sample, however regional differences can be found in Brazil, due to its continental dimensions. As limitations of this study, information bias can be highlighted by the tendency of MOHCs to overestimate their self-assessment results, especially since the available technological resources were based only on reports. This fact could be the subject of future analysis. Furthermore, the use of the secondary data may contain bias (under- or over-notifications).

5. Conclusion

Most endodontic services in the evaluated DSCs did not achieve output targets according to their performance analyses, which were more influenced by the number of endodontists working in the DSCs than by the available technological resources. Some managers were unaware of the MofH guidelines, suggesting that management measures and targets should be reevaluated.

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