Factors influencing referral for specialist endodontic treatment amongst a group of Dutch general practitioners

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Abstract

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Aim To analyse the need for endodontic referral amongst a group of Dutch general practitioners and to examine the current referral patterns and factors influencing the decision to refer.

Methodology A questionnaire was designed to investigate the perceived need for endodontic referral, the factors that influenced the decision process, the specialist to whom the case was referred and the frequency of referring. The questionnaires were distributed amongst 500 dentists attending a scientific meeting of the Netherlands Society for Endodontology (NVvE) and to 83 members of 10 study groups responding to a request in a newsletter. These groups were chosen to represent those dentists who possessed a similar degree of general dental knowledge and were acquainted with the requirements that endodontic treatment should meet.

Results The response rate was 41%. Of the respondents, 93% felt the need to refer cases to specialists. The majority of dentists preferred to refer to an endodontist rather than an oral surgeon. The major factors considered to be important or very important (37 and 54%, respectively) for endodontic referral were the presence of an obstruction in the canal, followed by the presence of a perforation or resorption (43 and 34%, respectively) and persistent signs and/or symptoms (39 and 32%, respectively). NVvE members referred significantly less to oral surgeons than non-members.

Conclusions Amongst a group of Dutch general practitioners there is a substantial perceived need for referring endodontic cases to specialists.

Keywords: dental referral, specialist endodontic treatment.

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Introduction

It has been concluded from several studies (de Cleen *et al.* 1993, Saunders *et al.* 1997, Weiger *et al.* 1997, de Moor *et al.* 2000) that there is a substantial need for root canal treatment in the population and that a considerable amount of this need will be in the form of retreatment.

Longitudinal studies after root canal treatment have shown high success rates up to 96% for periapical health (Strindberg 1956, Kerekes & Tronstad 1979, Sjögren *et al.* 1990). However, many of these studies were undertaken on root canal treatments carried out in specialist clinics or at dental schools.

The success rates of endodontic treatment performed in general practice are substantially lower. Several cross-sectional studies amongst the population in different countries have shown a high rate of apical periodontitis associated with root filled teeth (22–61%) and a high frequency of radiographically inadequate root fillings (47–86%) (Ödesjö *et al.* 1990, de Cleen *et al.* 1993, Eckerbom 1993, Buckley & Spångberg 1995, Weiger *et al.* 1997, Saunders *et al.* 1997, Marques *et al.* 1998, de Moor *et al.* 2000, Kirkevang *et al.* 2000, 2001).

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In order to improve the success rate in general dental practice it has been emphasized that undergraduate and continuing education in endodontics should be given more emphasis, and that the referral of difficult cases to dentists with advanced knowledge and training in endodontics should be made possible for the benefit of patients (de Cleen *et al.* 1993, Saunders *et al.* 1997, de Moor *et al.* 2000).

In a survey held amongst general practitioners (Saunders *et al.* 1999) it was shown that the decision to refer was influenced by certain factors. For example, the presence of a perforation was considered an important factor to refer by 87.1% of the respondents, followed by the need for retreatment (76%) and periradicular surgery (73.8%).

There have been no previous studies on the factors that may influence the decision to refer a patient for endodontic treatment by general practitioners in the Netherlands. Therefore, the aims of this study were: (i) to analyse the need for endodontic referral amongst a group of Dutch general practitioners; and (ii) to examine the current referral patterns in a group of Dutch general practitioners and the factors that influence the decision to refer.

Materials and methods

A questionnaire, containing 22 sections, was designed to investigate the need for endodontic referral as perceived by the dentist, the factors that influenced the decision to refer a patient, the specialist to whom a patient was referred and the frequency of referring. A short explanation was supplied in order to clarify the purpose of the study.

These questionnaires were distributed in two stages. One part of the sample consisted of 500 dentists practising in different areas of the Netherlands and attending a scientific meeting of the Netherlands Society for Endodontology (NVvE) in November 2000. The questionnaire was distributed to the participants prior to the start of the scientific programme. Completed questionnaires were collected anonymously on the same day in special boxes placed in the congress hall. No attempt was made to collect the questionnaires by mail after the meeting took place.

The second part of the sample was collected by advertising in a newsletter provided by the Dutch Dental Association (NMT) to members of so-called 'alpha study groups'. These study groups have been founded by the NMT in order to enhance quality by a process of intercollegiate consultation and testing. The dentists of these study groups were asked to respond prior to a lecture that covered the question of when to refer a complex endodontic case. In total 20 out of 152 study groups responded to the request in the newsletter, from which 10 study groups (consisting of 83 general dentists) could participate in the study. The questionnaires were mailed to the contact persons of the different study groups, who then distributed the forms. The dentists were asked to fill out the questionnaire and to return the form on the evening of the meeting just before the lecture took place. For participants in the study, membership of the NVvE and year, school and place of graduation was recorded.

Data analysis

Completed questionnaires were coded and entered in a database prior to analysis, which was performed using frequencies and mean values where appropriate. The two groups of the sample were compared using chi-square tests to exclude differences between the members of the alpha study groups and the participants of the scientific meeting of the NVvE.

Members and nonmembers of the NVvE and the time since qualification (dentists who graduated >20 years, between 10 and 20 years and <10 years ago) were compared using chi-square analysis.

Results

Of the 500 questionnaires distributed at the meeting of the Netherlands Society for Endodontology, 165 (33%) were returned. Of the 85 questionnaires distributed amongst the members of the alpha study groups, 73 (86%) were returned. No differences with respect to the answers put forward in the questionnaires were found between these two groups. In total, 238 (41%) questionnaires were returned and pooled in one sample.

The number of patients that were registered in the practice of the respondents varied between 700 and 10 000 patients, the majority (64%) had a practice size between 1500 and 3000 patients. Nineteen percent had less than 1500 patients, 17% had more than 3000 patients. One respondent (0.5%) had a practice size of 10 000 patients and four respondents (2%) had a practice size of 5000 patients. The data supplied did not specify whether these were single-handed or group practices.

The majority of the respondents (83%) had been graduated for more than 10 years, of which 50% had graduated more than 20 years ago. Of the respondents, 38% graduated at one of the two dental faculties in

Table 1 Considered need for referral of certain patients

Need for referral	% of total no. of respondents
No need for referral	7
Yes, to oral surgeon*	31
Yes, to endodontist*	87
Yes, to colleague with experience*	19

Data presented as percentages of total number of respondents giving the specific answer.
*More than one answer possible.

Table 2 Expert to whom patient is referred

	Always	Often	Sometimes	Never
Oral surgeon	10	16	65	9
Endodontist	16	10	51	23
Colleague with experience	1	4	22	73

Data presented as percentages of total number of respondents giving the specific answer.

Amsterdam. The number of dentists from Nijmegen and Utrecht were comparable (22 and 25%, respectively). The smallest number (10%) graduated in Groningen. Approximately half of the respondents (52%) were members of the Netherlands Society for Endodontology.

In relation to the question whether the respondents performed all root canal treatment themselves, 66% responded positively. The minority of respondents (34%) referred certain patients for specialist treatment. A small minority (7%) did not feel the need to refer a patient to a specialist (Table 1). Given the various choices, the majority of dentists preferred to refer the patient to an endodontist.

Table 2 shows the frequencies of actual referrals to the different experts. Of the respondents, 26% referred a patient with an endodontic problem 'always' or 'often' to an endodontist, whilst another 26% did so to an oral surgeon.

Given as reasons for referring to an oral surgeon, 69% of the respondents considered the advanced experience in surgery to be a major factor, followed by the availability of oral surgeons (20%), the shorter waiting lists of oral surgeons (13%) and the reimbursement by the insurance of the patient (12%).

Table 3 presents the frequency of certain factors which the respondents considered to influence their decision making process. Obstruction (e.g. calcified canal, broken instrument) was the factor that was most frequently considered to be an important (37%) or very important (54%) factor in making a decision to refer, followed by the presence of a perforation or resorption process (important, 43%; very important, 34%), persistent signs and/or symptoms (39 and 32%, respectively), the presence of a post and core in combination with a crown or bridge (31 and 37%, respectively) and the need for retreatment (42 and 26%, respectively).

The frequency with which certain endodontic cases were referred varied (Table 4), but the majority of the respondents (55%) referred 1–5 cases per month. Three percent of the respondents never referred a case and one respondent referred 15 cases per month.

Comparison between members and nonmembers of the NVvE showed that NVvE members referred significantly less to oral surgeons than nonmembers ($P \leq 0.0005$) For all the other variables no differences were found. The time since graduation (<10 years, between 10 and 20 years and >20 years ago) had no statistically significant effect on any of the variables.

Table 3 Factors considered to be of influence on the decision to refer

	Very important	Important	Neutral	Fairly unimportant	Not at all important
Difficult diagnostic problem	12	14	28	37	9
Persistent signs and/or symptoms (pain, swelling, sinus tract, etc.)	32	39	13	12	4
Tooth type (anatomy, canal curvatures, position in dental arch)	26	36	18	13	7
Obstruction in canals (obliteration, calcification, broken instruments)	54	37	7	2	1
Presence of a post and core in combination with a crown or bridge	37	31	17	12	3
Retreatment	26	42	17	11	4
Perforation, resorption	34	43	12	8	3
Open apex	14	25	32	20	8
Complicated trauma (luxations, avulsions, root fractures)	19	28	28	17	8
Size of the radiolucency	5	14	25	37	20
Insufficient time to perform treatment	2	8	18	27	46
Poor remuneration for treatment	2	4	20	27	46

Data presented as percentages of total number of respondents giving the specific answer.

Table 4 Frequency of referral

Frequency	% of total no. of respondents
Never	3
Less than once a month	36
1–5 cases per month	55
6–10 cases per month	5
More than 10 cases per month	1

Data presented as percentages of total number of respondents giving the specific answer.

Discussion

The present study describes the considered need for endodontic referrals and the factors that influence the decision to refer an endodontic case in a selected group of Dutch general practitioners who had been willing to participate in this study. One could argue that the group of dentists that completed the questionnaires was not representative for the Dutch population of dentists. Indeed, these groups were chosen to represent those dentists who possessed most likely a certain level of knowledge in general, and were acquainted with the requirements an endodontic treatment should meet in particular. Dentists who participate in continuing education may make a sounder judgment in the decision when to refer a complex endodontic case than those who are beyond that level of knowledge.

Currently, there are 5858 general dentists maintaining their own practice in the Netherlands with a mean of 2550–2600 registered patients (data from the Dutch Dental Association (NMT)). This is in accordance with data of the practice size in the present study in which the majority of the respondents had 1500–3000 registered patients. In the current study, 283 questionnaires were returned which represents approximately 5% of Dutch general practitioners maintaining their own practice.

In the present study, the majority of respondents (83%) graduated more than 10 years ago. Caplan *et al.* (1999) showed that general practitioners working for more than 10 years in the same dental Health Maintenance Organization (HMO) and with more than 10 years experience in dentistry were more likely to refer than less experienced dentists. However, in the present study the time since qualification as expressed in three cohorts did not appear to be of influence on any of the variables.

In the present study, the majority of respondents (87%) preferred referral to an endodontist above an oral surgeon. Actually, 26% of the respondents referred on a regular basis to an endodontist and an equal percentage always or often referred to an oral surgeon. The discrepancy between these figures might be explained by the fact that there are currently only 29 practising endodontists in the Netherlands who unfortunately are obliged to regulate the influx of patients with waiting lists. The current number of practising oral surgeons is, according to data of the NMT almost 200. The shortage of endodontists may also be an explanation for the fact that in the present study 66% of the respondents performed all root canal treatments themselves, although 93% did feel the necessity to refer. Geographic distribution of practices limited to endodontics may be another explanation for this phenomenon.

Comparison between members and nonmembers of the NVvE showed that members referred significantly fewer cases to the oral surgeon. One may speculate that NVvE members are more likely to be familiar with the requirements an endodontic treatment should meet, before surgery may be indicated.

Several studies have investigated the reasons for referring a patient for expert endodontic therapy (Harty 1992, Abbott 1994, Caplan *et al.* 1999). A survey in England showed that the most common reason for referral to practices limited to endodontics was for retreatment of previous root fillings (20% of patients), followed by inability to control pain and/or swelling (14%), and inability to diagnose the cause of the endodontic problem (13%) (Harty 1992). A similar study in Western Australia (Abbott 1994) found the diagnosis and management of pain as the major reason for referral (24% of patients), followed by calcified/blocked canals (18%), endodontic retreatment (15%), trauma (13%), surgery (7%), and perforations (6%). Caplan *et al.* (1999) compared the perceived indications for referral of general practitioners with those of endodontists. Of all conditions, teeth in need of apicoectomy/retrofill were recommended for referral most often by general practitioners, with 84 and 95% 'always or almost always' referring patients with single-rooted and multirooted teeth, respectively.

General practitioners and endodontists do not always agree on indications for referral. Caplan *et al.* (1999) found that 100% of the endodontists considered the presence of a radiographically calcified canal to be a condition in which 'most of the time' or 'always or most always' referral is indicated, whereas 61% of the general practitioners thought so. Another difference in indication for referral between general practitioners and endodontists was the condition in which the source of the pain could not be diagnosed (Caplan *et al.* 1999). Again,

100% of the endodontists considered this to be a condition in which a general practitioner 'always or most always' should refer. Of the general practitioners, 37% held that view.

In the present study, the presence of an obstruction was a major reason to refer (90% of respondents). This is in accordance with the results of Caplan *et al.* (1999) who showed that more than three-quarters of the general practitioners tended to refer teeth with separated instruments or ledged canals. In the present study, an obstruction was defined as an obliteration, a calcified canal or the presence of a broken instrument. Saunders *et al.* (1999) showed that the presence of a perforation was considered to be an important factor by 87.1% of the respondents followed by the need for retreatment (76% of the respondents) and the history of repeated abscesses (66.5%), which is in accordance with the results of the present study.

In the study of Abbott (1994), the reasons for referral to a single Australian endodontic practice were analysed by reviewing 2000 patient records. In a similar study (Harty 1992), the reasons for referral to seven British practices limited to endodontics were analysed by recording information relating to every patient referred for treatment over a 3-week period. From the results of the study of Abbott (1994), it appeared that management of pain was the main reason for referral (24% of the patients). This was also concluded by Harty (1992), who found that in 14 and 13% of the referred cases, respectively, the dentist was unable to control pain/swelling or diagnose the endodontic problem.

Likewise, in the current study, the presence of persisting signs and/or symptoms (e.g. pain and/or swelling) was considered to be an important-to-very important factor to refer by 71% of the respondents. When rapid resolution of pain and swelling is the major objective of referral in these cases, these data may imply that endodontists have to treat a substantial number of patients on an emergency basis. Therefore, endodontic practice management should consider logistic support to provide this type of treatment.

Conclusion

In summary, in a survey amongst a group of Dutch general practitioners, there was a substantial perceived need for referring an endodontic case to a specialist. The major factors influencing the decision for an endodontic referral were the presence of an obstruction in the canals, followed by the presence of a perforation or resorption process and persistent signs and/or symptoms.

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