ABSTRACT

Specialisation in endodontics allows for endodontic referrals by general dental practitioner (GDPs) and the study of factors influencing referral. These centre on a triad consisting of the referral process, non-clinical and clinical reasons for referral.

Many non-clinical factors have been identified which may influence the referral process to the endodontist. A systematic review study was undertaken into the main non-clinical factors influencing endodontic referral by general dental practitioners to endodontists. Such awareness and appreciation of these factors benefits the commercial aspect of the referral practice, increases access by reducing barriers to care, and ultimately improves patient care. A literature search yielded three papers that met the eligibility criteria. All studies included were cross sectional survey studies completed by GDPs. The main non-clinical factors seen from the studies include:

- Availability.
- Personality, relationships and communication.
- Location.

Availability presented as a common thread throughout all the studies. In conclusion, endodontic referral is multifactorial and influenced by several factors, that are not related to the nature of the endodontic disease, and this is a dynamic process. Due to the lack of high level studies, and limitations of the available studies, further research is suggested into relevant area of non-clinical endodontic factors for endodontic referral and thus allowing for further analysis.

Introduction

Communication has been identified as a key factor in the decision to refer.1 The endodontic referral process is also essentially one of communication, and involves the referrer communicating what they require. Before this happens, it is a requirement to obtain consent from the patient for transfer of their records; as the referrer has the responsibility to supply relevant information to the endodontist. The referral should be made by a referral letter. It is important to include salient information regarding the medical history, wishes, case history, previous radiographs, and an outline of the restorative and prosthetic treatment plan, particularly for the tooth in question together with other relevant information.

Emergency procedures performed by the referring clinician should also be outlined.2-4

Mid-treatment referrals, particularly aborted treatment attempts, should be avoided whenever foreseeable following preoperative assessment. This is because they are frequently associated with complications, and a patient who experiences problems after not having been referred in time may lose his or her confidence in the general dental practitioner. To avoid mid-treatment referrals, the general dental practitioner should carefully select between cases that they can undertake and those they should refer to an endodontist (Berdichewsky, 2010; Abbott et al, 1994).5,6 It is also favoured by the patient as it helps to reduce additional costs for them too.7

A unique aspect of endodontics is that the general dental practitioner will attempt treatment before referral. This can make it much more difficult and unpredictable for the endodontist.2 Continued communication will ensure that patients continue to be treated well. This is a responsibility that must be shared by both the referrer and the specialist.5 Many of the referred cases are sent as emergency patients to be seen immediately. The frequent urgency of the referral process places an added effort and responsibility on the referrer and the specialist. This is in order for the patient to receive the necessary.2

The endodontic referral procedure involves the relationship between two practitioners engaged in the treatment of the same patient, with the general dental practitioner sending the patient to a specialist for professional assistance and support. Freud conceived that relationships are therapeutically based upon the reactivation of feelings,
attitudes and behaviour patterns that the individual acquired from experiences in childhood.8

The referral relationship, therefore, can be viewed with limitations by way of transference-countertransference mechanisms, in which the general practitioner experiences feelings of transference towards the specialist, and the specialist experiences feelings of countertransference. This referral relationship shapes treatment and management, and also involves the patient in the same way.9

Endodontists seeking to increase their referral base might be more successful if they take a proactive approach to relationship-building with general dental practitioners. In a study, general practitioners feel that they relate to specialist colleagues essentially as extensions of themselves. General dental practitioners and specialists felt that interpersonal contact is a necessity.8 Those who believe endodontists are their partners in delivering quality dental care are more likely to refer to them. In general, endodontists are thought of highly by general dental practitioners who have a positive view of this specialty.1

General dental practitioners have reported that they referred less than half of their patients requiring endodontic treatment.1 Endodontists place high value on general dentists, as virtually all endodontic cases pass from a general dental practitioner. General dental practitioners for this reason are obviously referred to as the ‘gate keepers’.9,12 Endodontists rely upon the referring practitioners to keep busy, as usually the majority of work will be from referrals. For an endodontic practice, it has been shown that 15% of the referral base refers 50% of the patient volume. The remaining 85% refers the other 50%.3

Practitioners must demonstrate a willingness to communicate.11 Female physicians have been shown to engage in more communication that can be considered patient-centred, and to be more participatory in the decision-making process with patients.12 The importance of improved communication has been demonstrated between general and specialist practitioners with regards to the referral relationship.10 For those dentists who only send a few cases per year, communication can present as a difficulty for the endodontist.3

Effective communication is required before treatment is started within the process of informed consent for dental treatment. It should include explanation of the benefits, risks, potential restrictive factors, success and failure. The patient should be informed of the additional training and skills of the specialist. Even when the patient is referred, communication of these factors is essential and it allows the patient to consider the option of referral.8,12 Dietz et al13 have described this patient education and preparation as the ‘powerful referral’ as opposed to the frustration of a patient referred to the endodontist not knowing why they have been referred.

Patients often want to know more about the treatment to be performed than the referring dentist can tell them. Most often, the referrer can talk about initial therapy, but beyond that, treatment plans can vary greatly. The referrer and the specialist would be wise to communicate together and agree upon what information patients can reasonably be given prior to referral.2 This way, the patient will have more realistic expectations reducing frustration, discontent, and possible litigation.1 Each year, failure to inform the patient is high on the list of causes for litigation with endodontic claims among the most frequent.3

When a patient is sent to a specialist there is a shared responsibility for the patient. The referrer wants to know what is happening and what is anticipated. Letters, faxes, e-mail, and telephone calls are all possibilities. Face-to-face meetings are particularly effective. Conference calls can be productive, but face-to-face meetings are even better.8 Incidentally, for another mono-specialist, informal professional contacts were believed to improve professional relationships between periodontists and general dentists.10

It is important for the referring general dental practitioner to assure the patient that he or she has confidence in the endodontist. There must be a feeling of mutual respect between the referrer and the specialist. It is of utmost importance if the patient is to have a quality service from both general dental practitioners and specialists. Treatment does not always go exactly as planned and in the relationship there is no room for fault and blame. When treatment goes well, praise and credit should be given to both parties.2

TABLE 1

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<th>Referral process</th>
<th>Non-clinical reasons for referral</th>
<th>Clinical reasons for referral</th>
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General dentists can be sensitive as to how they perceive relations with the endodontist. Hints of arrogance can be very damaging to that association.2 Contact between referring general dental practitioners and specialists must be sincere, not aggressive, overly frequent or overbearing.9 All dentists have different levels of knowledge and each practitioner should be respected for what he or she knows, without being denigrated in any way for lack of understanding.2,11

A proactive relationship-building approach taken by endodontists towards increasing referral behaviour may benefit by information sharing and patient-related care and services. In addition, developing perceptions, traits, and other features aligned with increased referrals by promoting a caring and calming chair-side manner may be helpful. Particularly when interacting with those with six to 10 years in practice since qualification and female general dental practitioners; as they have been found to refer a higher ratio of patients to endodontists. Seeking referrals from those who understand and value endodontic referral care, and educating those who do not in a supportive tone, may also be useful.1

However, a questionnaire study into the professional relationship between general dental practitioners and another mono-specialist, periodontists, disclosed that relationships are better between those who had recently graduated from dental school. This is because it was thought that a lack of training leads to strained professional relationship between specialists and non-specialists.10

Specialisation in endodontics allows for endodontic referrals by GDPs and the study of factors influencing referral. These centre on the following triad:
These are relevant with regards to the endodontic outcomes following referral. Endodontists should have an understanding of the factors that influence the decision for GDPs to refer. Such appreciation benefits the commercial aspect of the referral practice and increases access by reducing barriers to care.12

General dental practitioners are capable of simple endodontics. However, they should exercise caution when analysing a case for factors that could lead to complications. It is easier to reduce complications by referral before treatment rather than deal with problems once they have occurred.5 Much research has been undertaken into the main clinical factors for referral, with particular reference to endodontic guidelines and relevance to endodontic pathways.

Aims and objectives
The aims and objectives of the study were to summarise the available literature and clarify the relative strengths and weaknesses of the literature relevant to answering the following research question: What are the main non-clinical factors influencing endodontic referral by general dental practitioners to endodontists? A systematic review.

Method
This study is to be achieved by completion of a systematic review. A systematic review is a literature review focused on a research question that tries to identify, appraise, select and synthesise all relevant research evidence relevant to a given question. In the hierarchy of studies systematic reviews are regarded as the strongest form of evidence-based medicine or dentistry. However, it is appreciated that the strength of the systematic review is limited by the level of evidence of the studies that it is based upon.

Inclusion and exclusion criteria
The criteria concern participants, interventions and outcome, as follows:
- Participants – All general dental practitioners, of varied time since graduation, with primary dentistry degree and experience.
- Interventions – To include non-clinical endodontic referral factors reported by general dental practitioners, no matter what clinical factors may also be included in the study.
- Outcome – Amount of referrals to a specialist endodontist based on non-clinical endodontic referral factors. References greater than 25 years old were not to be included as they will be considered obsolete. No language restrictions were imposed.

Literature search
A literature search was performed to identify suitable articles. The Medline bibliographic database was searched through PubMed. The University of South Florida (USF) Libraries database was also searched. The search terms were: factors; influencing; endodontic; and referral.

More specific search terms did not yield any results at all. Google scholar was also searched and no additional references were located.

Data extraction
The data was extracted, including quotes, by the author using a standardised electronic extraction form.

The form was piloted first and subsequently amended to ensure suitability.
Quality assessment
This was completed given particular respect to internal validity. Internal validity refers to the minimisation of method error or bias within a study. External validity refers to the generalisability of the conclusions of the studies to other populations. Assessment of quality notes were made on the data extraction form.

Results
The Medline bibliographic database literature search through PubMed identified four studies. Full papers were obtained of which two were relevant and met the inclusion and exclusion criteria. The University of South Florida Libraries (USF Libraries) database literature search identified six studies. Full papers were obtained, for which the only two that met the inclusion and exclusion criteria were duplicates.

After identifying relevant studies, through PubMed and USF Libraries databases that met the inclusion and exclusion criteria, the reference lists of these were reviewed. This yielded an additional 41 studies (excluding one repeat reference). Of these, one relevant study which met the inclusion and exclusion criteria was identified. (see Table 3).

No papers were excluded due to being unavailable in English. All studies identified were cross-sectional survey studies completed by GDPs.

The main non-clinical factors seen from the studies include: availability, personality and relationships, with availability presenting as a common thread through all the studies.

Discussion
The presence and relevance of non-clinical factors at play in endodontic referral has been mentioned in the introduction. The purpose of this review is to summarise and critically evaluate the available literature, based on the relative strengths and weaknesses, in order to answer the research question. Three studies met the eligibility criteria; all showed that non-clinical factors influence endodontic referral by GDPs and specific factors are mentioned.

All the studies appreciate the interrelationship and the relevance of non-clinical factors in the referral process by all parties involved. The triad, as drawn within the introduction summary, displays how these non-clinical factors form part of the endodontic referral. The mechanism by which non-clinical factors influence the referral process is better understood from this study. The main non-clinical factors seen from the studies include:

- Availability.
- Personality, relationships and communication.
- Location.

Availability presented as a common thread through all the studies. In study one, the respondents (220 general dental practitioners in Northern Ireland) were asked from 22 statements which three factors would promote their decision to refer. The most frequent was ‘waiting time for specialist consultation is relatively short’ (55%). In study three (member of two dental societies in United States including 216 general dental practitioners and 30 specialists) 87% of respondents felt the need for the specialist to be available for emergencies.

The relevance of waiting time is also mentioned in study two (among a group of 583 Dutch general dental practitioners), which says that Netherlands Society for Endodontology members referred significantly less to oral surgeons than non-members. Of the respondents, 26% referred a patient with an endodontic problem ‘always’ or ‘often’ to an endodontist, while another 26% choose to refer to an oral surgeon instead.

Reported reasons by the respondents for referral to the oral surgeon included the availability of oral surgeons (20%) and shorter waiting lists of oral surgeons (13%). One would consider waiting time to mean the same as availability. Therefore, availability is referred to as a main non-clinical factor in this review, rather than waiting time and availability.

The topic of endodontics is often associated with acute odontogenic pain due to inflammation. Urgent endodontic treatment is often required to alleviate the acute pain or to reduce the risk of acute exacerbation of a chronic periapical lesion. Consequently, availability within a well-organised diary will facilitate referral. In the instance of study two, it can be seen how availability can influence referral to other specialists. It is known that general dental practitioners may refer patients with an endodontic problem to specialists in oral surgery or endodontics, depending on availability.

General dental practitioners prefer to refer endodontic cases to a mono-specialist, the endodontist. Estimates vary, but it has been stated that 79% of endodontic cases are treated by general dentist practitioners, 1% by specialists in oral surgery and 20% by endodontists. It was seen that a proportion of general dental practitioners referred to an oral surgeon rather than an endodontist due to availability. This may not be the best option despite the efforts of the general dental practitioner to act in the best interests of the patient. Availability may be due to a lack of endodontists to accept

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No additional additional results.
referrals. This is given as a consideration for the number of referral to an oral surgeon in study two.10

The personality, relationships and communication of the endodontist with general dental practitioners and patients has been seen to be a main factor in endodontic referral. Personality is interconnected with the referral relationship and is considered important in influencing the referral decision. Abbott et al7 identified that communication is as key factor in the decision to refer. The referral relationship is complex and dynamic; as explained by way of transference-countertransference mechanisms.8 It is helpful to have an appreciation of this for the benefit of all parties involved.

It is therefore important for endodontists to take a proactive approach to relationship-building in order to build the referral base. Endodontists place high value on the general dentist as virtually all endodontic cases are referred by a general dental practitioner. It is therefore no surprise that general dental practitioners are referred to as the ‘gate keepers’.3,12

The location of the endodontist and their practice influences access through possible physical barriers. Close proximity (<25 miles) between the general dental practitioner and the endodontist was considered to be the top promoter for endodontic referral by 40% of general dental practitioners in study one. This supports the finding of another study by Zemanovich et al14 that states distance is of importance for the referral process to another monospecialist, the periodontist.

It has been seen that the demographics of respondents can influence responses received. In a study of referral demographic variable, affecting patient referral from general dental practitioners to periodontists, it was found that female respondents were more likely to refer three or more patients per month to a periodontist than a male respondent. This is of relevance to the studies included in this review because limitations in random sampling were identified. For instance in study three (Goldenberg) 86 respondents were male and only six were female. This might have created selection bias with regards to responses obtained.

Following review study one, despite limitations, is the likely highest quality paper followed by study two and three. Heterogeneity in these studies is lacking to allow further analysis of outcomes. Limited quality can lead to sources of bias.

Conclusions

Endodontic referral is multifactorial and influenced by several variables that are not related to the nature of the endodontic disease. From this systematic review, several interesting observations have been made. The study has shown that the main non-clinical factors for referral include availability, location and personality, relationships and communication of the endodontist. It can be seen that endodontic referral by general dental practitioner centres on these as seen below:

This is a dynamic process and cannot occur in isolation of the other factors that drive the referral process. Due to the lack of high level studies, and limitations of the available studies, further research is suggested into relevant area of non-clinical endodontic factors for endodontic referral and thus allowing for further analysis.

With thanks to Malcolm Edwards, Registered Specialist in Restorative Dentistry & Prosthodontics, for supervising this research at the UCLan.

TABLE 4

NON-ClinICAL FACTORS

| Location | Availability | Personality, relationships & communication |

REFERENCES