

SCIENTIFIC
SECTION

Attitudes of UK consultants to teledentistry as a means of providing orthodontic advice to dental practitioners and their patients

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Abstract

Objective: To determine UK orthodontic consultants' attitudes to the provision of orthodontic advice to general dental practitioners by electronic means.

Design: Questionnaire.

Setting: Conducted by email and surface mail as appropriate in August 2000.

Subjects: All those UK NHS orthodontic consultants contained in the membership lists of the Consultant Orthodontists Group of the British Orthodontic Society.

Outcome: An 86 per cent response was obtained from the 231 consultants.

Results: More than half (58 per cent) of the consultants were interested in providing an electronic diagnostic service for the general dental practitioners in their locality and 70 per cent were in favour of further research into this possibility. Provided this was mediated through their GDP, only 26% would oppose consultant advice being given electronically from a centralized source.

Conclusions: A majority of UK orthodontic consultants support the concept of using teledentistry to make their advice more accessible to dentists and patients.

Index words:
Orthodontic diagnosis,
orthodontic referral,
telemedicine.

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Introduction

The aims of the undergraduate orthodontic curriculum would appear to be broadly similar in the UK, Europe, and N America^{1–3}. These may be summarized as being the recognition of malocclusion, and knowing what when and where to refer. Sadly, the evidence suggests that these aims have never been fully achieved in the majority of graduates.^{4–9} In the UK, unlike many parts of Europe, dental specialties have been slow to develop outside dental schools. Because of this and because the UK has, until recently, had few trained orthodontic specialists, the general dental practitioner in the past had an important contribution to make in the delivery of UK orthodontic care. For that reason, the UK General Dental Council's recommendations on the orthodontic undergraduate curriculum graduate also include the teaching of those skills necessary to plan and carry out

simple orthodontic treatment.¹ Here, too, there is evidence that this requirement is not being met^{10–11} and the University Teachers Group of the British Orthodontic Society has recently urged the General Dental Council to remove this requirement from its recommendations in the undergraduate curriculum.¹²

Increasing numbers of orthodontic specialists in the UK and the deployment of orthodontic therapists should reduce the need for general dental practitioners (GDPs) to provide orthodontic treatment in the future, but their freedom to be able to do so is likely to remain. In addition, the role of the GDP in initiating referral will remain and will continue to be the key to the effective use of specialist orthodontic services.

In theory, general dental practitioners working within the UK National Health Service can obtain free advice from their local consultant orthodontist to assist them in orthodontic case selection and treatment planning. The

consultant service was established in 1950 to support the delivery of orthodontic care within the newly established National Health Service. There are now 231 consultants in the UK who are based in most of the major hospitals. These are salaried appointments and represent the highest grade of specialist working within the NHS. Those successful in obtaining a consultant appointment enjoy complete equality of status with their medical and surgical colleagues, and will have completed at least 8 years postgraduate training, of which at least 5 will have been in full time orthodontic training.

Consultant orthodontists have three main functions:

- to advise on the treatment of patients referred to them by general dental practitioners, dental specialists and consultant colleagues;
- to provide treatment for those cases requiring the highest level of specialist care, usually severe malocclusion and those case requiring multidisciplinary planning;
- to assist in the training of specialists and trainee consultants and to support continuing professional development in orthodontics for local general dental practitioners.

The emphasis on each one of these depends very much on local circumstances and in particular the availability of local orthodontic specialists.¹³ In addition, the consultant takes a leading role in coordinating orthodontic services in his catchment area. He or she also provides an independent expert clinical opinion in cases of dispute concerning treatment need or treatment outcome. Because consultants are relatively evenly distributed throughout the UK, no patient should have to travel more than a few miles to obtain a consultant opinion and over 90 per cent of such patients are seen within 13 weeks.¹³

However, despite the fact that specialist consultant advice is available to the general dental practitioner only a small number of GDP orthodontic patients receive it.¹⁴ This is unfortunate, since many incorrect planning decisions are made by GDPs.¹⁵ At the same time, a high proportion of referrals made to UK orthodontic consultants are judged to be inappropriate¹⁶⁻¹⁷ and this adds unnecessarily to consultant waiting lists.¹⁸

Over the years various approaches have been tried by consultants to improve matters, but none as yet has been shown to have had any real effect.¹⁹⁻²¹ The essential question is how to make specialist advice on orthodontic case selection and treatment planning more accessible to the general practitioner in such a way as he or she will find it easier to use than to ignore.

Advances in telemedicine have been shown to offer a way of addressing this issue that applies equally to medical specialties. For example successful demonstrations of remote diagnosis have been reported in dermatology, otolaryngology, ophthalmology, and accident and emergency services.²²⁻²⁵ As a recent pilot study suggests that the same would be true in orthodontics²⁶ this survey was undertaken to determine if UK consultants would support the concept of advice being provided in this way to UK GDPs.

Method

In the Autumn of 2000 a questionnaire was sent to all 231 UK orthodontic consultants (Figure 1). This questionnaire, which included supporting references not included in Figure 1, was structured to provide information, which would be helpful to the specialty in the light of the UK Government's initiatives in Information Technology, and its commitment to improving patient access to healthcare information.²⁷ Those 158 consultants (68.2. per cent) who were known to have access to email were contacted by this means. The remaining 73 were sent the same questionnaire by surface mail. Reminders were sent to those who had not replied. Those approached by email were recontacted after 1, 2 and 3 weeks. The remainder were sent a postal reminder after 3 weeks.

Results

An 86 per cent response was obtained (199 useable replies). The 158 email requests yielded 119 replies (75.3 per cent response), but 10 email addresses were not recognized and so 80.4 per cent would be a truer rate of response. A 25 per cent email response was received within 24 hours and a 41 per cent response within 7 days. The postal response was 93 per cent (68 replies), but included some postal replies to an original request sent by email. This appeared to be because a few consultants wished to preserve their anonymity, which is impossible with an emailed reply. Also it appeared that some consultants dealt with their emails by annotating hardcopies. Eighty respondents (40 per cent) said they had been present at the meeting 6 months earlier when tele-dentistry advice had been demonstrated.

The responses to the questions are summarized in Figures 2-6. A high percentage (70 per cent) were in favour of further research into providing advice by

- 1 The use of telemedicine to support access of patients to the NHS is now an established NHS priority (Information for Health, NHS Executive, September 1998, Chapter 5).
‘Did you see the presentation by Prof. Stephens of videoconferencing/electronic whiteboards at the Royal College in Feb 2000?’
Yes/No
- 2 We all have a need to ensure that our diagnostic resources are used as effectively as possible. A major problem is that many GDPs’ referrals are inappropriate, and many others come too late. Several studies have established that the use of referral protocols is ineffective in improving matters. We believe that our pilot work at Bristol shows that electronic referral of patient records goes a long way to address this problem.
(a) ‘Do you agree that this would be an appropriate area for further development?’ 1–5
(1 = Strongly disagree, 5 = Strongly agree)
(b) ‘Would you be interested in being able to offer an electronic diagnostic service for your local GDPs?’
(1 = Not at all interested, 5 = Very interested)
3. Because the distribution of specialist orthodontic practitioners varies greatly across the country, some consultants have very few specialists on their patch and rely upon GDPs to provide routine treatment locally. Many of them need consultant orthodontic advice, but it is clear that many GDPs find such advice difficult to access for one reason or another.
‘In view of this, even if you do not wish to run a diagnostic service yourself, would you support a national electronic advice service for GDPs run by the consultant orthodontist group?’ 1–5
(1 = Strongly oppose, 5 = Strongly support)
4. Bearing in mind the current moves of the Government in developing NHS Direct and the recent GDC ethical guidelines that approve technology as a means of providing advice (M. Ridler, personal communication reporting meeting of the ethics committee of the General Dental Council, 24 September 1999):
‘Would you support a national initiative whereby patients could obtain advice on treatment need from a central facility’
(a) directly 1–5
(1 = Strongly oppose, 5 = Strongly support)
(b) by electronic referral by their GDP? 1–5
(1 = Strongly oppose, 5 = Strongly support)
5. Please add here any further comments you would wish to make below and overleaf ...

Fig. 1 The questionnaire used in the survey. Note supporting references have been committed but occur in the text.

electronic means and 59 per cent of consultants were interested in running such a service for the general dentists in their locality (in fact, two consultants were already providing this). The difference between the two figures represents those concerns that were raised in the free text section of the questionnaire. These were:

- are the medico-legal aspects of such a service covered?
- would advice in this way be seen as meeting hospital workload targets?
- would the images of records be satisfactory?
- would the consultant know the skills of particular GDPs well enough to be able to advise them appropriately?

Half the consultant body supported the idea of a national advice service run by the Consultant Orthodontists Group (50 per cent) and only 26 per cent opposed. Question 4 had been included because the Government had recently announced its interest in applying the Index of Orthodontic Treatment need to all NHS treatment.²⁸ A number of consultants were concerned that they might well be inundated with cases where the dentist felt that the threshold for NHS treatment need had not been reached, but where the parent wanted a second opinion on this decision. It seemed to the authors that teledentistry might well provide an effective way of dealing with such cases through a central facility, which would depersonalize such decisions. It will be seen that 50 per

cent of consultants would support dentists having access to central advice for their patients, but 31 per cent opposed this. Only 26 per cent would support direct patient access to such a service and 50 per cent were opposed to this idea.

The data were also analysed according to the age group of the respondent (34–45 years, 46–55 years,

56–65 years), whether the respondent had email or not, and whether they were present at the annual meeting of orthodontic consultants held 6 months earlier where the authors had described and demonstrated a teledentistry referral system. Surprisingly, in all analyses no significant difference was found in the distribution of the responses between groups (Chi square test, $P > 0.05$).

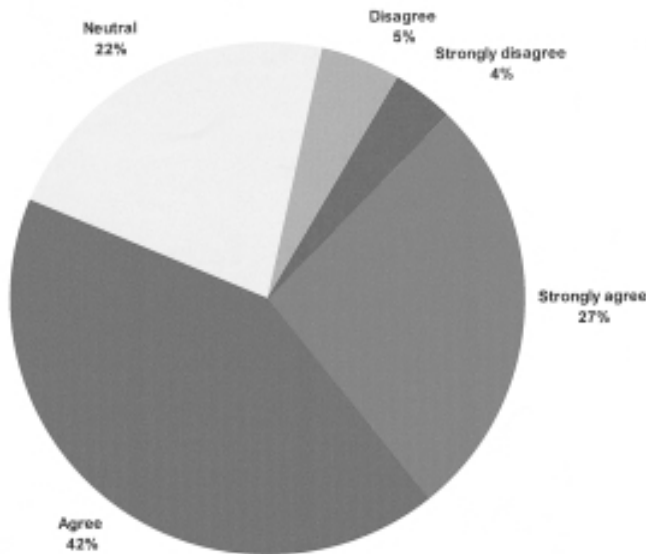


Fig. 2 The distribution of the responses to question 2a ‘Do you agree that this (electronic referral) would be an appropriate area for further development?’

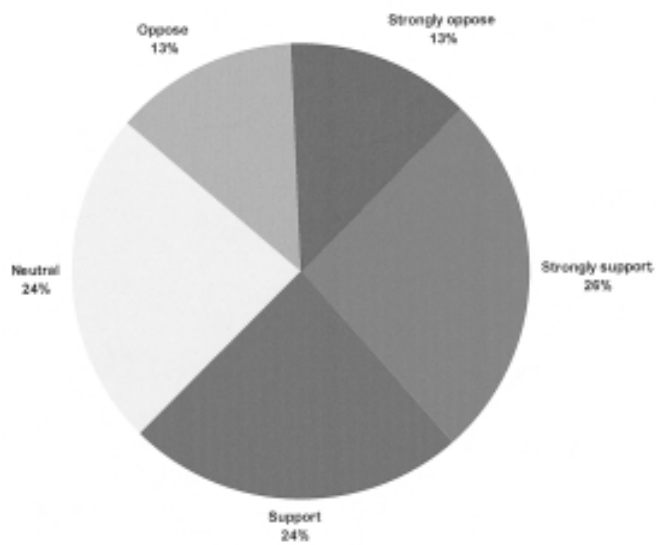


Fig. 4 The response to question 3 ‘Would you support a national electronic advice service for GDPs run by the consultant orthodontist group?’

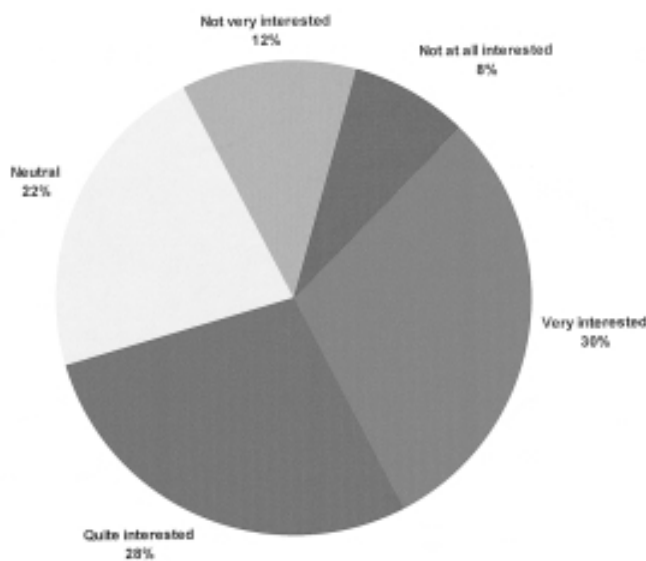


Fig. 3 The response to question 2b ‘Would you be interested in being able to offer an electronic diagnostic service for your local GDPs?’

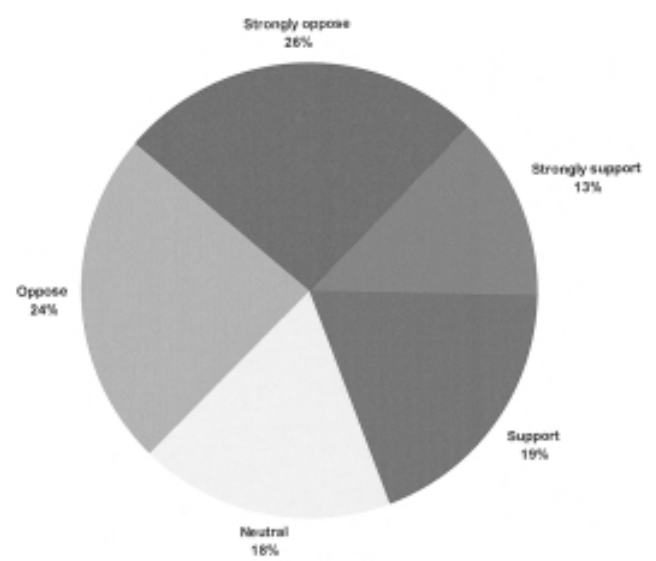


Fig. 5 The response to question 4a ‘Would you support a national initiative whereby patients could obtain advice on treatment need from a central facility directly?’

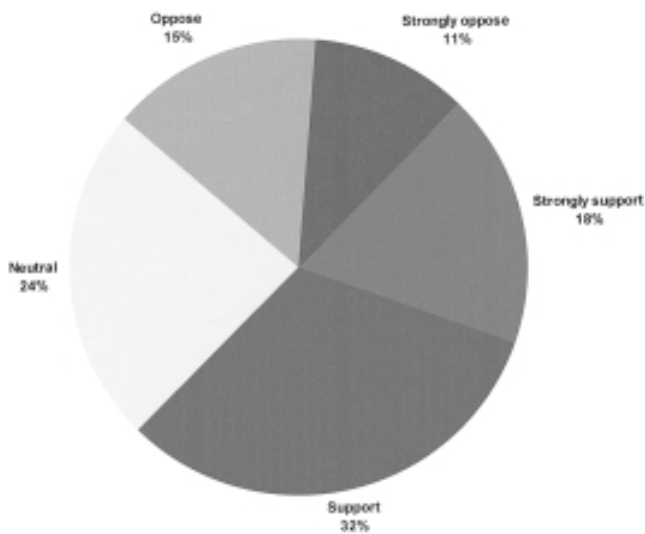


Fig. 6 The response to question 4b 'Would you support a national initiative whereby patients could obtain advice on treatment need from a central facility by electronic referral by their GDP?'

Discussion

There have been very few reports of the application of telemedicine to the field of dentistry. This is surprising because many successful applications have been described in other outpatient based specialties.^{22–24} Telemedicine techniques would also appear to be applicable in the delivery of continuing professional education²⁹ and the dissemination of standardized clinical audit records, such as those used in the orthodontic CASES project.³⁰

Conclusions

The majority of UK orthodontic consultants were in favour of developing telemedicine techniques to provide orthodontic advice to general practitioners. There appears to be no reason why these methods should not be used by orthodontists in other countries to obtain second opinions from their specialist colleagues and to provide immediate advice to referring general practitioners. Telemedicine techniques may also have a role in facilitating continuing professional education and clinical audit in orthodontics.

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