Does the referral and selection for NHS-funded dental implant treatment in the UK follow National Guidelines?

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ABSTRACT

INTRODUCTION The Royal College of Surgeons of England (RCSE) has provided a national guideline document detailing specific selection criteria for National Health Service (NHS) dental implant therapy in the UK. The aim of this study was to investigate whether these guidelines are being observed both in the referral and selection of patients.

PATIENTS AND METHODS Information was collected prospectively from 8 consecutive implant assessment clinics at Guy's and St Thomas' Hospital Trust over a 6-month period, via a questionnaire concerning the reason for referral for implant treatment, dental/smoking/radiotherapy status, and the consultant decision on whether an application would be made for NHS implant funding.

RESULTS Of the 103 referred patients who attended the appointment, 83 (80.6%) fell within the established priority groups for NHS implant therapy: in particular, hypodontia and teeth lost through trauma. However, up to a quarter of patients had untreated caries or periodontitis ($n = 23$, 22.3% and $n = 26$, 25.2%, respectively), a contra-indication for NHS implant therapy. The proportion of patients with caries was more than double for general dental practitioner-referred (28.3%) than hospital-referred subjects (12.5%) with the difference approaching statistical significance ($P = 0.061$). Selection for implant funding application was highly dependent on whether or not a patient belonged to a priority group of the national guidelines ($P < 0.001$).

CONCLUSIONS Although in most respects there is good adherence to the RCSE national guidelines both in the referral and selection of patients for NHS implant therapy, about a quarter of patients particularly those referred from general dental practitioners rather than hospitals, would be contra-indicated from NHS therapy because of untreated caries or periodontitis.

KEYWORDS

Dental implants – Guidelines – Health services research

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The introduction of dental implants has revolutionised the practice of dentistry and replacement of missing teeth. Studies have reported a high level of predictability and success using this treatment modality for a variety of clinical situations in both edentulous and partially dentate subjects.^{1–4} However, the provision of a single implant-supported crown costs almost £2000 and government (National Health Service, NHS) resources for dental implant therapy in the UK are limited. The demand for NHS-funded implant therapy and the number of patients referred outweigh the available resource. In order, therefore, to facilitate and standardise the selection of patients for NHS implant therapy nationally, The Royal College of Surgeons

of England (RCSE; Faculty of Dental Surgery) published a guideline document in 1997 entitled: *Guidelines for selecting appropriate patients to receive treatment with dental implants: Priorities for the NHS*.⁵

This document sets out the patient categories that are considered highest priority for NHS-funded treatment. In the main, these include: (i) patients with severe intolerance of dentures due to physical gagging or severe ridge resorption (affecting denture stability or producing pain); (ii) those with developmentally missing teeth due to hypodontia or a cleft palate; and (iii) those who have lost teeth through trauma or resection of a tumour. The suggested main contra-indications to NHS-funded implant therapy include patients with

Table 1 Demographic data and referral source

	Total sample (<i>n</i> = 126)	Attendees (<i>n</i> = 103)	Non-attendees (<i>n</i> = 23)	<i>P</i> -value for difference
Median age (interquartile range) in years	30.5 (20–48)	29.0 (20–48)	32.0 (22–56)	0.340
Gender				0.143
Male	54 (42.9%)	41 (39.8%)	13 (56.5%)	
Female	72 (57.1%)	62 (60.2%)	10 (43.5%)	
Referrer				0.915
GDP	76 (60.3%)	60 (58.3%)	16 (69.6%)	
Guy's Hospital	29 (23.0%)	25 (24.3%)	4 (17.4%)	
Other hospital	18 (14.3%)	15 (14.6%)	3 (13.0%)	
Self	1 (0.8%)	1 (1.0%)	0	
Specialist orthodontist	1 (0.8%)	1 (1.0%)	0	
GMP	1 (0.8%)	1 (1.0%)	0	

untreated periodontal disease or uncontrolled caries. Due to the increased risk of implant failure in smokers^{6,7} and those with irradiated bone,⁸ the guidelines approach these as modifying factors where extra caution should be applied. Other provisos included in the report are that implant treatment should not be undertaken in young individuals until growth is complete and that, where possible, simpler conventional treatments (such as resin-bonded bridgework) should be tried and shown to fail before implant treatment is considered.

The aim of this study was to investigate whether these national guidelines are being observed in the referral and selection of patients for NHS-funded implant therapy.

Patients and Methods

A prospective, cohort study was undertaken whereby information was collected from each patient with an appointment on one of eight consecutive implant clinics at Guy's and St Thomas' Hospital Trust over a 6-month period.

A postgraduate student completed a questionnaire for each patient, collecting information on: (i) the reason for referral for implant treatment and the cause of tooth loss or absence (thus ascertaining whether the patient would fall within the RCSE guideline priority groups); (ii) the caries, periodontal, smoking and radiotherapy status (as determined by relevant history, clinical and radiographic examination); and (iii) the decision made by the senior clinician/consultant on whether an application would be made for NHS implant funding.

Statistical analysis with significance testing was undertaken using the two-sample Wilcoxon rank-sum (Mann-Whitney) and Pearson χ^2 tests.

Results

A total of 126 subjects had implant assessment appointments during the study period. Of these, 103 (81.7%) attended and 23 (18.3%) did not.

Table 1 summarises the demographic data. There was no statistically significant difference between attendees and non-attendees in any variable, although the trends demonstrate that the majority (60.2%) of attendees were female and the majority (56.5%) of non-attendees were male. Overall, nearly two-thirds (60.3%) of referrals were

Figure 1 Proportion of subjects within each NHS priority category (RCSE guidelines).

Table 2 Subject data (clinical and social) by referral source

Referrer	Fits a RCSE priority category?		Untreated caries?		Untreated periodontitis?		Current smoker?	
	No	Yes	No	Yes	No	Yes	No	Yes
GDP (<i>n</i> = 60)	14 (23.3%)	46 (76.7%)	43 (71.7%)	17 (28.3%)	45 (75.0%)	15 (25.0%)	49 (81.7%)	11 (18.3%)
Hospital (<i>n</i> = 40)	6 (15.5%)	34 (85.0%)	35 (87.5%)	5 (12.5%)	30 (75.0%)	10 (25.0%)	34 (85.0%)	6 (15.0%)
Difference	<i>P</i> = 0.307		<i>P</i> = 0.061		<i>P</i> = 1.000		<i>P</i> = 0.664	

received from general dental practitioners (GDPs) and over a third (37.3%) were from hospitals.

All subsequent data analysis and reporting relates to the 103 subjects who attended, as limited information was available regarding the 'non-attendees'.

Referrals

Of the 103 patients, 83 (80.6%) fell within the RCSE-established priority groups for NHS implant therapy. Of these, 42.2% had some form of hypodontia, nearly a third (30.1%) had lost teeth through trauma, and 15.7% demonstrated intolerance of complete dentures (Fig. 1). The 6 patients in the 'other' category included those with miscellaneous developmental disorders such as a misplaced canine and a dentigerous cyst. Of the 3 patients with defects from resection of carcinoma, 2 had previous radiotherapy.

The 20 patients (19.4%) who did not come within any of the NHS priority groups, had lost teeth through caries, periodontitis, endodontic lesions or restorative failure such as root fracture associated with a post crown.

Only 17 (16.5%) of the total 103 subjects were current smokers; however, up to a quarter had untreated caries or periodontitis at the time of referral (*n* = 23, 22.3% and *n* = 26, 25.2%, respectively).

In order to facilitate data analysis according to referral source (Table 2), the 6 categories have been condensed into 2 (GDP or hospital) and the 3 patients referred from other random sources (self, orthodontic specialist and general

medical practitioner) excluded. There was no significant difference between those referred from GDP or hospital with regard to the proportion of patients: (i) falling within the NHS implant priority groups (RCSE guidelines); (ii) with untreated periodontitis; or (iii) who were current smokers. However, the proportion of subjects with caries was more than double for GDP-referred (28.3%) than hospital-referred subjects (12.5%) with the difference approaching statistical significance (*P* = 0.061).

Selection for funding application

Of the 103 patients, the senior clinician/consultant in charge made the decision to apply for implant funding for 42 (40.8%) and not to apply for 51 (49.5%). The decision was postponed for the remaining 10 subjects (9.7%) until further information could be collected and considered, such as an orthodontic opinion, assessment of an existing denture or tomographic examination.

The reasons stated in the questionnaire for not making a funding application, were that: (i) the patient did not fall within a priority group for NHS implant therapy (RCSE guidelines); (ii) the patient had untreated dental disease; (iii) the patient was still growing (the youngest patient seen being aged 14 years); (iv) the patient did not wish to have tooth replacement or implant treatment; (v) the patient would be reconsidered for implant therapy only if an alternative treatment (such as a bridge or better fitting denture) proved unsatisfactory; (vi) the patient required a phase of

Table 3 Funding application decisions according to inclusion within RCSE priority groups for NHS implant therapy

	Application for funding	No application for funding	Undecided	Difference
Fits a RCSE priority group	42 (50.6%)	31 (37.3%)	10 (12.0%)	<i>P</i> < 0.001
Does not fit any RCSE priority group	0	20 (100%)	0

orthodontic treatment prior to implant therapy; or (vii) because implant treatment would not be possible for reasons of inadequate space or questionable bone quality.

Table 3 confirms that selection for implant application was highly dependent on whether a patient belonged to one of the priority groups of the national guidelines ($P < 0.001$). None of the 20 subjects falling outside these groups were selected for funding application. Of the 83 falling within the guidelines, only 42 (50.6%) were chosen for application.

As shown in Figure 2, the proportion selected was much greater for those who had lost teeth through trauma (72.0%) and those with severe intolerance of complete dentures (69.2%) than for patients with hypodontia (40.0%). Reasons given for 'hypodontic' patients not receiving an application for implant funding included the possibility of growth being incomplete (due to a patient's young age) or the recommendation that another treatment modality (such as an adhesive bridge to replace a missing lateral incisor) be attempted before reconsideration for implant treatment.

Discussion

Due to the disparity between NHS resources for dental implant therapy in the UK and the demand for such treatment, this study aimed to investigate the suitability of referrals received and subsequent applications for NHS funding, as determined by the national guidelines of the RCSE.⁵

The study was undertaken at Guy's and St Thomas' Hospital Trust, an NHS provider of implant treatment in the UK covering a large catchment area. Implant referrals to this hospital may be accepted from all locations within the UK but are received particularly from the regions of London, Kent, Surrey, Sussex, Berkshire, Essex, Hampshire and Buckinghamshire. The results provide a good example of the NHS implant referral and selection trends, and may be representative of other NHS implant centres in the UK; however, this is unknown as no such investigations have been undertaken to date.

Only 81.7% of patients with an appointment on the Implant Assessment Clinic actually attended, despite a relatively short 4-month median waiting time (interquartile range, 4–5) from referral to appointment. The finding that the majority of attendees were female and non-attendees male concurs with reported patterns that usually indicate that females have greater concern with health and are more likely to seek healthcare and treatment than males.^{9,10}

The majority (80.6%) of the patients who were referred for implant treatment and attended the appointment belonged to the 'priority groups' for NHS implant treatment as established by the RCSE. This favourably high proportion maybe due to the fact that at Guy's and St Thomas' Hospital, a summary of the national guidelines is usually sent to referring practitioners for reference.

Despite this, about a quarter of the patients, particularly those referred from GDPs (comprising almost two-thirds of the referral base) were found to have untreated caries or periodon-

titis and would, therefore, be contra-indicated from NHS implant therapy. It is anticipated that this study will increase awareness of the strict criteria and guidance that are followed in considering suitability for implant treatment under the NHS.

Patient selection for implant funding application was found to comply exactly with the national guidelines. As funding by primary care trusts generally concurs with the recommendations of hospital 'providers', it may be assumed that available NHS resources for implant therapy are being allocated appropriately to 'high priority' individuals.

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