The consultant orthodontic service —1996 survey

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Objective To evaluate the working patterns and facilities of the consultant orthodontist service.
Design A cross-sectional survey.
Setting Consultant orthodontist departments in the UK.
Subjects and methods All consultant orthodontists in the UK were sent a questionnaire that gathered information on the individual consultant, the facilities available, the new patients referred and patients under current treatment.
Results The consultant orthodontist service provided treatment to a high number of patients who were in definite need of orthodontic treatment. A marked reduction in the use of removable appliances suggests improving standards of care and provision of more complex treatment. The caseload was high and a fair proportion of patients were returned to their referring dentists with treatment plans. The consultant service has not completely evolved into a service that provides treatment at a super-specialist level alone.
Conclusions There has been little change in the consultant orthodontist service over the past ten years. Arguably, this is because of the wishes of the purchasers and the shortage of trained orthodontic manpower as a direct result of poor manpower planning and lack of funds for post-graduate training.

In the UK, orthodontic care is provided by three main services. These are the general dental, the community orthodontist and the consultant orthodontic services. Each of these has different roles — the specialist practitioner provides locally based orthodontic care, the community orthodontist treats people who are disadvantaged socially or geographically, and the consultant service has several main roles, namely:

- Providing advice and treatment for individuals with severe malocclusions
- Training of career orthodontists and general dental practitioners
- Co-ordinating orthodontic services for their catchment area
- Specialist outreach, especially in areas of multidisciplinary planning and treatment.

The consultant service was first established in 1950 and the population of most parts of the country has access to consultant orthodontist care.[1] Since the service started the Consultant Orthodontists' Group has carried out surveys of their work in May 1971 and May 1985.[1,2] The reports that arose from these surveys described many aspects of service provision, work patterns and hospital facilities. When the data from the surveys were compared, one important finding was that there had been a steady rise in the number of consultant orthodontists. Unfortunately, despite this increase, long treatment waiting lists suggested that there was considerable unmet orthodontic need. Furthermore, in many areas of the country, the consultant was the only source of orthodontic treatment. In spite of this pressure, the data also revealed that there was an increasing concentration on advice and treatment of a more complex and multidisciplinary nature.

By the time of the second survey in 1985, it was noted that there had been an increase in the number of specialist orthodontic practitioners.[2] As a result, the authors suggested that in the future more orthodontic treatment might be carried out in a primary care setting. Therefore, the consultant's role was expected to change to that of super specialist with a personal clinical commitment confined to complex and multidisciplinary care and to those patients requiring multidisciplinary advice and treatment. It was further argued that if the treatment of those people with severe malocclusion and congenital facial abnormalities was concentrated into the hands of specially trained consultants, the standard of care would be raised. Finally, they recommended that one of the best ways to make use of scarce resource would be to establish two-way referral pathways between secondary and primary care orthodontists.

In view of the extensive changes resulting from the *National Health Service and Community Care Act 1990*,[3] principally leading to the creation of the internal market and a primary care lead health service, it was decided to carry out a third survey which aimed to:

- Evaluate any changes in service provision
- See if the predictions of the 1985 survey regarding the changing role of the consultant orthodontist had occurred.[2]

Method

In May 1996 questionnaires were posted to all consultant orthodontists in England, Wales, Scotland and Northern Ireland. We then sent a reminder letter to non-respondents in July 1996.

The questionnaires were divided into four parts and were directed at the following areas:

Section 1. Collected personal data about the consultant.

Section 2. Enquired about clinical and support facilities at consultants' main, secondary and peripheral bases.

Section 3. Collected the following data on new patients who were seen for consultation during a one month period:

- Need for treatment by the Dental Health Component of IOTN[4]
- Gender of patient
- Age
- Who referred the patient
- The time that they had spent on the new patient waiting list
- The outcome of the consultation
- Whether they had been referred for retreatment following a previous course of orthodontic treatment
- The perceived complexity of treatment, using a five point scale (Table 1).[5]

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REFEREED PAPER
Received 17.09.98; accepted 07.04.99
 187: 149–153

- Whether the referral had been made at the correct time.

Section 4. Data were collected on all patients who were having treatment or being reviewed in the consultant's department over a two week period. Patients being seen by all grades of staff were included. The following data were collected:

- Grade of operator
- Dental Health Component of IOTN[4] of the starting malocclusion
- The treatment that was carried out on that attendance
- The type of appliance that was being worn following that attendance
- The nature of treatment ie orthodontics only, orthodontic/orthognathic surgery, cleft lip and palate etc.
- The perceived complexity of treatment on a five point scale (Table 1).[5]

Table 1 Complexity scale used

Very simple	Extractions only or a single removable appliance.
Simple	More than one removable appliance required.
Moderate	Upper removable appliance with extra-oral anchorage/traction or single arch fixed appliance or upper and lower fixed appliances for alignment of Class I cases.
Complex	Full fixed appliance in both arches for cases other than Class I but excluding cases defined as very complex. Treatment with functional appliance only.
Very complex	Full fixed appliance in both arches for all IOTN 5 cases or the additional difficulty that the case requires interdisciplinary treatment or the additional involvement of a functional appliance.
Not yet known/ Not applicable	

Validation of the data

In order to test the validity of the data that were collected, we multiplied the number of new patient attendances recorded (in Section 3 of the questionnnaire), to calculate a yearly caseload, and compared this figure with the central hospital recorded new patient attendances for each hospital orthodontic unit. Any difference was evaluated with a paired '*t*' test.

Descriptive and analytical statistics were derived using *SPSS*.

Results

Response

We sent out 203 questionnaires; 152 (75%) were returned completed in whole or in part.

The consultants' details

One hundred and twenty (78%) respondents, were regionally based NHS consultants, 20 (13%) were dental hospital NHS consultants and 12 (9%) held honorary contracts. A total of 91 (60%) of consultants held full-time contracts, with 26 (17%) maximum part-time. The remaining 33 (22%) had other part-time contracts or honorary contracts.

One hundred and seventeen (77%) were male and 33 (22%) were female. However, the female consultants were almost all (31) regionally based with only two in dental hospital NHS consultancies. At the time of the study there was known to be one female honorary consultant.

Over the past ten years 73 consultants were appointed, of these 29(35%) were female and 22% of the posts were newly established. These appointments represent 38% of all male consultants but 88% of female consultants, signifying an increase in the number of women employed as consultant orthodontists.

Work pattern

When the consultant orthodontists were asked to estimate the proportion of the working week that they spent carrying out various tasks, the data in Table 2 were generated. This reveals that NHS consultants spent most of their time on patient care, while for honorary consultants their time was split between patient care, teaching and research. NHS consultants in teaching hospitals made a substantial contribution to undergraduate and postgraduate teaching.

Facilities

We collected data on the availability of facilities in 112 main bases. All these sites had cephalostats and OPG machines. Photographic facilities were available in 95% of main bases, while the figures for computerised cephalometry and word processors were 78% and 97%, respectively. When we examined data on laboratory facilities, 83% of departments had an 'on-site' laboratory. The data for 41 secondary bases showed most of these to be generally well equipped, with 95% having cephalostats, 98% OPG machines, 71% photographic facilities, and 66% word processors. However, only 40% of secondary bases had an 'on-site' laboratory and 30% computerised cephalometry.

Personal opinions

We also collected data on the consultants' perceptions and satisfaction with their jobs. This revealed that only 30% of respondents felt that hospital orthodontic facilities were generally adequate. Nevertheless, 45% thought that their own hospital orthodontic facilities were adequate. Most (83%) supported the concept that the consultant orthodontic service should be hospital based and

Table 2 Work pattern for different types of consultant expressed as a percentage of the working week for a total of 152 consultants in the UK

Task	Regional based consultant (120 consultants)		Dental school based consultant (20 consultants)		Honorary (university) (12 consultants)	
	Mean %	Range	Mean %	Range	Mean %	Range
Personal treatment	44	12–75	31	10–50	19	5–40
Diagnosis/review	25	8–50	20	10–40	12	0–40
Administration	11	0–32	14	0–27	14	0–32
Audit	4	0–10	2	0–5	3	1–5
Meetings/conferences	4	0–16	4	0–10	3	2–5
Undergraduate teaching	1	0–12	7	0–40	16	2–40
Postgraduate teaching	6	0–30	16	0–40	13	0–30
Lecturing to GDPs	2	0–15	3	0–10	2	0–5
Research	1	0–16	3	0–20	19	2–40
Travelling between clinics	2	0–30	1	0–5	0	0–2

Table 3 Source of referral for consultation patients seen over a one month period by 152 consultants working in the UK

Source of referral	Number	%
General dental practitioner	7,549	83
Community dental officer	625	7
Community orthodontist	61	1
Specialist practitioner	453	5
Oral surgeon	145	2
Other orthodontic consultant	56	0.6
Restorative consultant	34	0.4
Other	200	2

60% felt that closer links should be sought with the community orthodontic service.

Interestingly, 79% felt that the standard of orthodontic care in the UK was not acceptable and 61% suggested that this could be improved by revision of the DPB fees and monitoring service, by increasing orthodontic fees for specialist orthodontists (50%) and by employing orthodontic auxiliaries (71%). They also supported the concept of parents being responsible in part for the payment of orthodontic fees (58%).

The advent of the internal market was considered by only 10% to have brought benefit to their job role. When asked about the usefulness of the Index of Orthodontic Treatment Need in prioritising care 74% felt that IOTN had a useful role to play.

New referrals

Data were collected on 9,320 new patients. Males comprised 43% and 57% were female. Importantly, 93% of patients were seen within the Patient's Charter limit of 13 weeks. The source of the referral is shown in Table 3.

The referred patient's IOTN score was recorded and this revealed that 70% of the referred patients were allocated to grades 4 and 5 of the Dental Health Component ('need for treatment'), 22% were allocated to grade 3 ('moderate need for treatment') and 8% did not need treatment, grades 1 and 2.

Encouragingly, the proportion of new patients referred for retreatment had halved from 12% in 1985 to 5.6%. General dental practitioners had treated 59% of these patients, specialist orthodontic practitioners 21%, community dental officers 8%, and hospital based orthodontists 12%.

Table 4 The outcome of consultation for the patients seen over a one month period

Outcome of consultation	Number	%
Accepted for treatment	2,828	31
Returned to referrer for rereferral later	629	7
Referred back with treatment plan	2,223	25
Too early for treatment	1,543	17
Referred to specialist orthodontist	319	4
Referred to community orthodontist	71	1
No treatment needed and/or wanted	1,086	10

Table 5 The number of episodes of treatment provided by the different personnel within the hospital orthodontic departments over the two week data collection period

Person providing treatment	Number	%
Consultant	13,007	49
Senior registrar	1,822	7
Registrar	3,400	13
Associate specialist/staff grade	2,260	9
Clinical assistant	4,548	17
SHO/postgraduate	981	4
Community orthodontist in department	513	2

Table 6 The appliances that were used to provide treatment for the patients who were seen over a one month period within the hospital departments

Type of appliance	Percentage
Upper and lower fixed	53
Single arch fixed	19
Functional	12
Removable appliance and fixed	3
Removable appliance only	13

Table 7 The casemix of all the patients that received treatment over a one month period within the hospital departments

Type of treatment	Percentage
Orthodontic treatment only	73
Orthodontic and orthognathic	7
Orthodontic and minor oral surgery	11
Cleft lip and palate	4
Orthodontics and restorative	4
Medically compromised patients	0.6
Other joint specialty care	0.4

For those whose stage of development allowed treatment complexity to be assessed, simple or very simple treatment comprised 34% of new patients, 16% were moderately complex, and 50% were complex or very complex.

The outcome of the consultation is shown in Table 4.

The patients under treatment and review

The final set of data were collected on 25,959 patients who were currently under treatment or review. They were attending appointments with varying grades of personnel as shown in Table 5. Overall, the need for treatment in terms of IOTN for these patients were as follows: grades 4 and 5 of the Dental Health Component (DHC)= 86%, grade 3 =13%, and grades 1 and 2 = 1%. However, the different grades of operator treated cohorts with varying proportions of DHC grades 4 and 5. Thus DHC grades 4 and 5 comprised 89% of consultants' caseload, 91% of senior registrar cases, 83% of registrars' patients, and 80% of the cases treated by other grades of staff.

The complexity of treatment grades for all operator grades together was 6% simple or very simple, 18% moderately complex, and 76% complex or very complex.

The appliances that were in use are shown in Table 6. While, Table 7 shows the casemix and interaction with other disciplines.

Data validity

We obtained centrally recorded new patient attendance data for 108 departments (several departments were attended by more than one consultant). The comparison between the hospital held yearly new patient attendances and the consultant's recording of new patients revealed that there were no significant differences. These data are shown in Table 8.

Discussion

The results of this study reveal that the consultant hospital service is an integral part of a comprehensive orthodontic service. A high number of patients in great or greatest need of orthodontic treatment are treated and nearly one third of these require interdisciplinary management. In addition, the consultants have allotted time to meet their role as trainers of future specialists

Table 8 A comparison between the centrally held hospital new patient attendance data and the number of new patient episodes recorded by the consultants (estimated for 12 months) for a total of 108 hospital departments in the UK

Source of data	Mean	*N*	sd	se	95% confidence interval	*t*	*P*
Central hospital	847.5	108	453.8	—	—	—	—
Consultant recorded	788.3	108	355.7	—	—	—	—
Difference	59.2	108	381.4	36.7	–13.54 to 131.97	1.61	0.11

and general dental practitioners. The figures for regionally based consultant, take no account of the time spent providing continuous clinical cover for trainees demanded by new educational contracts.

Overall however, there has been relatively little change in the average pattern of working over the past ten years and the consultant service has not reached the goal of 'super-specialist' that was predicted by the authors of the 1985 survey.

There may be many reasons for this, however, the most important is that in many parts of the country the consultant hospital service remains the only source of orthodontic advice and treatment. This is particularly relevant outside of the large conurbations and the South-East. As a result, the demand for routine treatment is overwhelming.

Facilities

Over the past ten years, there has been a general improvement in the consultants' facilities. The most marked change has been the increase in the use of computerised cephalometry and word processors and indicates a growing use of information technology. Another interesting observation is the continued reliance on on-site laboratory facilities, perhaps, reflecting the specialised nature of the work carried out. Unfortunately, just over half of consultants felt that these resources and facilities were not adequate to meet the demand for treatment. This is reflected in the lengthy waiting lists for treatment.

The new patients

One of the most important findings was that many departments have a high caseload of new referrals. It was also evident that the case load for some consultants was too high and the consultant tended to act as a filter and advice service at the expense of providing complex treatment.

We also found that most patients who were referred by general dental practitioners were in definite need for treatment, according to IOTN. We can, therefore, conclude that the referring dentists were acting as effective 'gatekeepers'. Nevertheless, a proportion of patients could have been considered as inappropriate referrals. For example, 17% of patients had been referred too early for treatment to be provided, and 10% were considered as not needing or did not want treatment. Subjectively, it could be suggested that GDPs are referring patients early because they are concerned with the length of new patient waiting lists. However, this is not borne out by our data because most patients were seen within 13 weeks of referral. These data suggest that the referral of patients with low treatment need and early referral constitute a waste of resource and reinforce the conclusion of other research in this area.[6] This problem may be improved by using referral guidelines to inform general dental practitioners of the consultant service selection policy and the correct time to refer. This step has recently been taken using an educational programme for general dental practitioners in Mersey Region, and early results are encouraging.[7]

It was also evident that a high proportion of patients were referred back to the referring dentists with a treatment plan. Several research projects have shown that this type of care, mostly carried out with removable appliances, is less effective.[8,9] However, it is not possible from this data to know how much of this treatment today is being carried out by former clinical assistants or those who have undergone some training in fixed appliance treatment.

One final important finding from the new patient data was that for most consultants there was still only limited two-way referral between the hospital and specialist practitioner services even when both services were present. The results are almost identical to those detected in 1985. This is disappointing as the 1988 Report called for close interaction and two-way referral pathways between hospital departments and specialist orthodontic practices. Such liaison makes better use of resource increasing the efficiency of the service and benefiting patients.[10]

The current caseload

The data derived from the current caseload were interesting because there had been some marked changes in appliance use. The most striking of these was a reduction in removable appliances worn. In 1985, 39% of treatments involved the use of a removable appliance, either alone or in combination with other appliance systems, whereas in the present study removable appliance use had reduced to 16%. This suggests that the consultant service is providing contemporary treatment and discarding treatment methods that have been shown to be less effective.[8,9]

It is important to be aware that the appliance use that we report relates to those being worn at the time of the survey. These were not necessarily the most complex appliances anticipated in the course of treatment. The number of removable appliances used may have been augmented by patients in the early phases of a fixed appliance treatment. Furthermore, the broad range of appliances not only reflects the case type, but also the training requirements of the personnel in the department.

Validity of the data

It is important when carrying out a survey investigation that some attempt is made to check on the validity of the data that are collected. The only way that this could be done for this survey was to compare the number of new patient attendances recorded by the consultants with data on new patient attendances held centrally by the hospital departments. When we carried this out, we did not detect any significant differences between these figures. We can, therefore, conclude that the data used in this investigation have a degree of validity.

Conclusions

- The results of the study reveal that over the past ten years there has been limited change in the working pattern of the consultant orthodontist service. Importantly, the natural evolution into the role of super-specialist providing complex care has not occurred, perhaps, because of the different objectives of purchasing health authorities and a general shortage of orthodontic manpower

compounded by its unequal distribution.

- Where the consultant service is the sole provider of orthodontic care a broad range of malocclusion must be accepted for treatment.
- The slow increase in orthodontic manpower remains of considerable concern. Consultant orthodontists together with their university colleagues are the trainers of future orthodontic specialists and improve skills within the general dental service. Without the present numbers of trainers and training departments it would be difficult even to maintain the present number of trained orthodontic specialists.
- Thankfully the short, but damaging, period of competition between NHS providers is ending. The new agenda for healthcare will be driven by health authorities through their health improvement programmes and primary purchasing care groups. It is essential that all orthodontic providers are able to work in conjunction with health authorities and purchaser commissioning groups to plan strategies for orthodontic care. This should be based around a coalition of all types of orthodontic provider to ensure that standards of service and training may be maintained.

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