Are specialist outreach clinics for orthodontic consultation effective: a randomised controlled trial

O'Brien K, Mattick R, Mandall N, Wright J, Conboy F, Gosden T

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Specialist outreach clinics for orthodontic consultations were compared with main hospital-based consultations at a large orthodontic department. For both type of sites, the consultation appointment between the orthodontist and the patient was a triage appointment intended to identify whether treatment was needed, if the patient was prepared to wear fixed appliances, and whether the patient's oral health was adequate for orthodontic treatment.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients who were referred to the Orthodontic Unit of the University Dental Hospital of Manchester for orthodontic treatment. The patients lived in the inner city of Manchester and in Tameside.

Setting
The setting was secondary care. The economic study was carried out at the University of Manchester (UK).

Dates to which data relate
The dates to which the effectiveness data related were not reported. The price year was not reported.

Source of effectiveness data
The evidence for the final outcomes was derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
Sample size calculations were based on potential differences in the proportion of patients who did not attend their appointments, using data derived from a prior investigation. The authors selected a meaningful difference of 15% in the proportion of patients who failed to attend their appointment, based on a power of 90% and an alpha-value of 0.05. The authors calculated that a sample of 127 patients in each group was needed. When a dentist referred a patient for a consultation appointment, the patients were randomly allocated to receive the consultation in either the main base hospital or an outreach clinic at the local community health centre. A total of 324 patients were entered into the study.
Of these, 169 (52.2%) were allocated to an outreach clinic and 155 (42.8%) were given appointments in the main hospital base. The authors did not report the gender distribution of the two groups, nor the age structure.

**Study design**
This was a randomised controlled trial (RCT) that was undertaken in five different centres (the main hospital and four different outreach clinics). The patients were allocated to each type of site using lists prepared using random number tables. The patients were only followed up for the duration of the consultation, hence there was no loss to follow-up. Even though the referred patients were aware that they were involved in the study, they were unaware that they could have received their consultation appointment in a different location. The clinicians were aware of the consultation site. All the data were entered into a database and, during the process, none of the investigating team was aware of the group to which the patient had been randomised. The identifying code was broken only when the data had been analysed.

**Analysis of effectiveness**
The authors did not report whether the study was conducted on an intention to treat basis or on treatment completers only. The outcomes used were:

- whether the patient was accepted to orthodontic treatment;
- the total time spent in the health centre or main base hospital (excluding additional time spent completing questionnaires);
- patient attendance; and
- the consumers’ perceptions of the service.

The consumers’ perceptions were obtained using a questionnaire administered to the adult accompanying the patient. The questionnaire included questions on travel arrangements and costs, and preference for site of appointment. Satisfaction with the clinic was measured using the Group Health Association of America Consumer Satisfaction Survey, which measured satisfaction on a 5-point scale ranging from poor to excellent. At analysis, the groups were not shown to be comparable in terms of their age and gender. However, the authors evaluated the effect of socioeconomic status on attendance.

**Effectiveness results**
There was no difference in attendance between the hospital (69.7%) and the outreach clinics (68.6%), (p=0.95).

Using an analysis of variance followed by the Bonferroni adjustment, the authors found that there was a statistically significant difference between the deprivation scores for those who attended and those who failed to attend without notification, (p=0.030).

Sixty-two per cent of referrals to the hospital were classified as appropriate, compared with 69.6% of referrals to the outreach clinics, (p=0.296).

The total time in the clinic from arrival was 28.1 (+/- 13.3) minutes for the outreach clinic and 42.1 (+/- 26.6) minutes for the hospital base, (p<0.002).

The time in the clinic from the actual appointment was 20.5 (+/- 19.6) minutes for the outreach clinic and 31.7 (+/- 26.3) minutes for the hospital, (p<0.002).

Consumers who attended the outreach clinic were more satisfied with the location of the clinic than those who attended the hospital. However, those who attended the main base hospital were more satisfied with the surroundings and waiting facilities. 57.4% of the outreach clinic patients and 49% of the hospital patients preferred to attend a clinic near home. However, 92.4% of the outreach clinic patients and 97.4% of the hospital patients would have been prepared to see the orthodontist in another setting.
Clinical conclusions
It can be concluded that there were no marked advantages or disadvantages of orthodontic consultation outreach clinics in terms of the outcome of care.

Measure of benefits used in the economic analysis
The authors did not derive a summary measure of health benefit. The analysis was, in effect, a cost-consequences analysis.

Direct costs
The resource quantities and the costs were reported separately. The direct costs included in the study were those to the NHS and patient. The yearly capital costs, overheads and equipment charges were calculated per square metre, and scaled up by the area for each dental site. This figure was then combined with the yearly throughput of outpatients, enabling a cost per patient to be determined. The use of orthodontic and nursing staff was equivalent in each site, and all clerical work was carried out in the hospital, hence these costs were not included. The authors also included the cost to the clinicians of travel to the outreach clinics from the main hospital. The total cost to consumers was the travel costs to the clinic. These were calculated using the AA marginal costs of 13 pence per mile travelled, or the actual cost of the public transport used. Discounting was unnecessary since all the costs were incurred during a very short time and, appropriately, was not performed. The study reported the average costs. The price year was not reported.

Statistical analysis of costs
The costs were treated stochastically. It is unclear whether differences between the two groups were evaluated using Student’s t-test or the Mann-Whitney U test.

Indirect Costs
The authors included the opportunity costs of the clinician travelling to the outreach clinic. These were calculated using the Dental Guild rate of 187.50 per session.

Currency
UK pounds sterling (€).

Sensitivity analysis
Sensitivity analyses were not performed.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total cost to the consumers were 0.95 (+/- 1.43) in the outreach clinic group and 1.17 (+/- 1.22) in the hospital group, (p=0.008).

The NHS per patient costs, including the travel and opportunity costs of physicians, were very similar between the groups. These costs were 9.11 per hospital patient and 8.40 per outreach clinic patient.

Synthesis of costs and benefits
The costs and benefits were not combined.
Authors’ conclusions
In general, there were no marked advantages or disadvantages for orthodontic consultation outreach clinics in terms of the cost or outcome of care.

CRD COMMENTARY - Selection of comparators
The choice of hospital consultations as the comparator was justified on the grounds that, in the UK, secondary dental care is provided through district general hospitals. You should decide if this is a widely used health technology in your own setting.

Validity of estimate of measure of effectiveness
The basis of the analysis was an RCT. This was appropriate for the study question as well-conducted RCTs are considered the ‘gold’ standard study design when comparing health interventions. The study sample was representative of the study population. However, the patient groups were not shown to be comparable at analysis, as the authors did not provide baseline characteristics of the patients in both groups. The analysis of effectiveness appears to have been handled credibly, as the patients were allocated to the groups in a purely random fashion, the investigators were blind to the location of the dental treatment, and differences between the groups were compared using appropriate statistical techniques. Further, the authors evaluated the role of socioeconomic status on attendance at the clinic.

Validity of estimate of measure of benefit
The authors did not derive a summary measure of health benefit. The analysis was, in effect, a cost-consequences analysis.

Validity of estimate of costs
All the categories of cost relevant to the perspective adopted appear to have been included in the analysis. Some relevant costs (e.g. staff and clerical costs) were omitted from the analysis since they were equivalent in each site. Hence, these omissions will not have affected the authors’ conclusions. The costs and the quantities were not reported separately, which will limit the generalisability of the authors’ results. The costs were derived from the authors’ setting. Appropriate statistical analyses of the costs were performed. Discounting was unnecessary since all the costs were incurred during one year. The price year was not reported, which will hamper any future inflation exercises.

Other issues
The authors made appropriate comparisons of their findings with those from other studies that found that, for other specialties (e.g. ophthalmology), outreach clinics provided improved patient access and patient preferred attending the outreach clinic. They also compared their results with a meta-analysis on patient satisfaction with medical care and an investigation into specialist clinics for dermatology and orthopaedics. This investigation found that nearly all patients were willing to see a specialist in another setting. The issue of generalisability to other settings was not addressed. However, the authors pointed out that their conclusions may not be totally transferable to the rural setting, where the distances to travel may be greater and public transport may not be as well developed as in city areas. The authors do not appear to have presented their results selectively and their conclusions reflected the scope of the analysis.

The authors acknowledged a number of further limitations to their study. First, the use of community health centres as outreach clinics. Second, the findings of the investigation may only be relevant to the provision of orthodontic consultations in large conurbations.

Implications of the study
The authors recommended further research on the long-term benefits of outreach clinics, perhaps using large general dental practices as outreach clinics, along with an evaluation of the effectiveness of outreach care in rural areas.
Source of funding
Funded by the Central Manchester Healthcare Trust Research Committee.

Bibliographic details

PubMedID
11551092

DOI
10.1038/sj.bdj.4801140a

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Analysis of Variance; Chi-Square Distribution; Community Health Centers /utilization; Dental Service, Hospital /utilization; Episode of Care; Health Care Costs; Health Expenditures; Health Services Accessibility; Humans; Orthodontics /economics /organization & administration /statistics & numerical data; Patient Satisfaction; Referral and Consultation /statistics & numerical data; Statistics, Nonparametric; Treatment Outcome

AccessionNumber
22001001851

Date bibliographic record published
28/02/2005

Date abstract record published
28/02/2005