

An audit of prosthodontics undertaken in general dental practice in the South East of England

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IN BRIEF

- The most common prosthodontic treatment provided by GDPs in the South East of England were crowns.
- Few dentists reported making acrylic partial or complete dentures and most reported not providing implants.

Aims Before embarking upon changes to teaching in prosthodontics it is important to identify what techniques are being used in general practice. The aim of this study was to assess the current range and quantity of fixed and removable prosthodontics reported in general dental practice in the South East of England. **Method** Structured questionnaires were sent to 191 randomly selected dentists from the GDC list in the South East of England, with 71% of the dentists completing the questionnaire. The questionnaire included demographic data, NHS/private and the range and quantity of fixed and removable prosthodontics. **Results** The reported number of removable prostheses undertaken was low; most metal dentures were made in private specialist practices, whereas most acrylic partial and complete dentures were made in NHS general practices. The number of bridges, in particular minimal preparation bridges, was low as opposed to the number of crowns, which was high in all types of practices. Implants were provided mainly by the specialists. **Conclusions** Dentists reported prescribing low numbers of removable and fixed prostheses with the exception of crowns. Metal dentures and implants were mainly provided by specialists. The implications of this study emphasise the importance in teaching crowns to undergraduates.

INTRODUCTION

The current emphasis on teaching in prosthodontics is probably based on historical perceptions of teaching practices. Universities need to be aware of and react to changes in clinical practice to ensure today's undergraduates are appropriately trained for the future needs of clinical practice. However, new requirements introduced in already cramped curricula cannot be met without removing other techniques which may no longer be applicable to modern practice.

The general impact of dental caries^{1,2} and tooth wear³ will probably mean the continuing need for teaching fixed prosthodontics. The gradual decline in edentulism and the predictions for the future suggest that within the next 10–20 years the proportion of adults without teeth will reduce

by a third.^{4,5} There are certain unknown influences such as the changes to remuneration in general practice and the effect of increasing costs of dentistry on patients' choice on whether to restore or extract teeth. Therefore, the true long-term trend towards decreasing edentulism is not fully known but changes have occurred which might have an impact on healthcare delivery in the form of complete dentures.

Before embarking upon changes in teaching it is important to identify what are the commonly practised aspects of prosthodontics. The aim of this study was to assess the current range and quantity of fixed and removable prosthodontics carried out in general dental practice in South East of England. This information could then be used when designing curricula for undergraduates.

METHOD

A questionnaire was designed to record the range and frequency of prosthodontic techniques performed by dental practitioners. The potential criteria were discussed at length in focus groups with dentists and teachers in prosthodontics to identify the questions and their focus.

The questionnaire was designed using the Likert principles and initially piloted on colleagues in the department.⁶ Following changes to clarity and design, the questionnaire was piloted on a small sample of colleagues working in general practice. Again following feedback, the final and agreed questionnaire was posted in April 2008. The questionnaire was sent to 191 randomly selected dentists in the South East of England. The names and addresses of general dental practitioners (GDPs) registered in the South East of England were obtained from the General Dental Council (GDC) website and alternate registrants were selected for inclusion. The first mailing was sent out in April and then second and third reminders were posted at six and nine weeks respectively. The questionnaire was registered as an audit project with the Guy's Dental Hospital.

The questionnaire included questions on the dentist such as gender, years since graduation, speciality, clinical sessions per week and funding arrangements, along with the range and quantity of a fixed and removable prosthodontics. The questionnaire focused on the number of commonly used prostheses used by the

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dentist in the preceding 12 months. The choices were 0, 1-5, 6-15, 16-30 or above 30, and each dentist estimated how many of each procedure they had completed over the time period.

Statistical analysis was performed using Stata 9 software (StatCorp LP, TX 77845, USA). The years since graduation was not Normally distributed and was described using median and interquartile range. Differences in the proportion of responses to different questions and according to their type of practice were assessed using chi-square tests.

RESULTS

The total number of responses from GDPs was 136 (71%) of which 64% were male and the median number of years since qualification was 21 yrs (interquartile range: 8.5-30.5). The majority worked in general practice (68%) with 10% considering themselves restorative dentists and a further 7% prosthodontists; the remainder did not classify their practice. The funding arrangements question revealed that 41% of the dentists were all-private, 17% mainly private, 35% mainly NHS and 7% only NHS. Most dentists worked between 8 and 10 sessions each week (59%) but 24% and 15% worked either 6-7 or 4-5 sessions respectively. Only 2% worked less than one day a week. An overview of all the restorations and the number of each provided by the practitioners is shown in Figure 1 and Table 1.

Removable prosthodontics

The respondents reported prescribing few cobalt chromium partial dentures: 36% reported prescribing none and 38% completed between 1 and 5 (Fig. 2). Only nine dentists reported placing over 16 cobalt

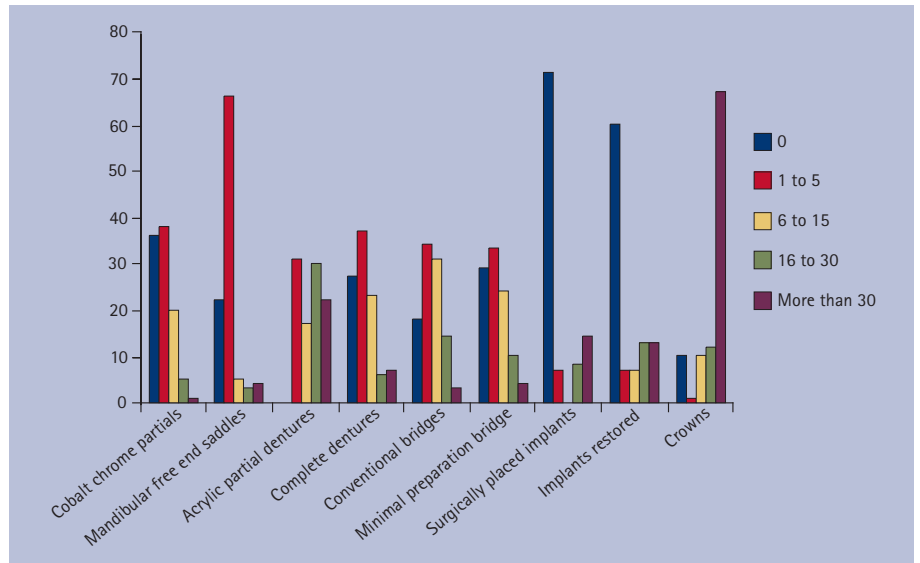


Fig. 1 Overview of restorations provided by the respondents in the previous 12 months

chromium dentures each year. A similar response was observed with free-end saddle dentures, with 22% reporting providing none and 66% between 1 and 5 (Fig. 3). The number of acrylic dentures reported was higher than metal-based dentures (p <0.001) but also relatively low, with 31% completing between 1 and 5, 17% between 6 and 15 and 30% between 16 and 30 (Fig. 4). Practitioners working in specialist practice reported making more metal dentures and this difference was statistically significant (p <0.001). Acrylic partial dentures were preferred in NHS practice compared with private practice (p <0.001).

The trend continued with complete dentures, with 27% completing zero, 37% between 1 and 5 and 23% between 6 and 15 (Fig. 5). Dentists in general practice reported making more complete dentures than those in specialist practice (p <0.001). Complete dentures were preferred in NHS practice compared with private practice (p <0.001).

Fixed prosthodontics

Most dentists completed over 30 crowns (67%), with 12% completing between 16 and 30 and 10% between 6 and 15. Surprisingly, 10% reported providing no crowns and 1% between 1 and 5. There were more crowns made in private practice compared with NHS (p <0.01). The trend on conventional bridges was similar to that in acrylic dentures, with 18% reporting providing none but 34% reporting providing between 1 to 5 and 31% between 6 to 15 bridges (Fig. 6). Fewer dentists reported prescribing minimal preparation bridges, with 29% claiming none and 33% between 1 and 5 (Fig. 7). There were more minimal preparation bridges being made in private practice compared with NHS (p <0.01).

Implants

Surgical placement of implants was uncommon, with 71% of dentists reporting undertaking none. A relatively small proportion of dentists reported placing 1 to

Table 1 The percentages of respondents providing various types and numbers of restorations

Number of restorations provided in the previous 12 months	Percentage of respondents providing restorations					
	Cobalt chromium partial denture	Free end saddle mandibular denture	Acrylic partial denture	Complete denture	Conventional bridge	Minimal preparation bridge
0	36	22	0	27	18	29
1-5	38	66	31	37	34	33
6-15	20	5	17	23	31	24
16-30	5	3	30	6	14	10
More than 30	1	4	22	7	3	4

5 (7%), 16-30 placements were reported by 8% and more than 30 by 14%. The trend was repeated in those dentists restoring implants. The majority of implants were surgically placed and restored in private specialist practice ($p < 0.001$).

DISCUSSION

The response rate of 71% was achieved by sending reminders to encourage participation and was high and broadly representative of the sample population. The response rate is consistent with other similar studies and recognises the value of sending reminders and stamped addressed envelopes.^{7,8} Although this audit could be considered representative of the GDPs resident in the South East of England, it would not be true to say the same of the rest of the UK. Variations in patient needs and treatment pattern of GDPs within the UK will vary. This project gives some appreciation of local GDPs' working patterns and a more substantial national study would provide more information. However, these data are valuable to those teaching prosthodontics in the London area and maybe helpful to those in other parts of the country.

The working practice of the dentists was interesting, with 41% working less than four days a week. This probably reflects the working pattern of many dentists, with relatively few working full-time. In retrospect it would have been worthwhile identifying what proportion of dentists worked eight, nine or ten sessions, but at the time of planning this spread of working was not foreseen. The other surprising finding was the proportion of dentists working in private practice (58%). This finding may not necessarily be repeated elsewhere in the UK and it is likely that regional differences would occur, but in the South East of England the majority of dentists in this study were mainly working outside the NHS contract.

The findings reported by the dentists were interesting, particularly in relation to the number of dentures. The cost of providing cobalt chromium-based dentures under the NHS contract is challenging for many dentists. In this cohort, most dentists admitted working under private contract and so our results were even more surprising. Within the restrictions of this study it is not possible to predict why metal-based dentures were not commonly

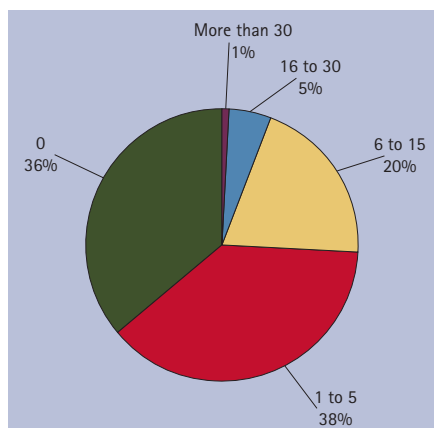


Fig. 2 Cobalt chromium dentures made in the last 12 months

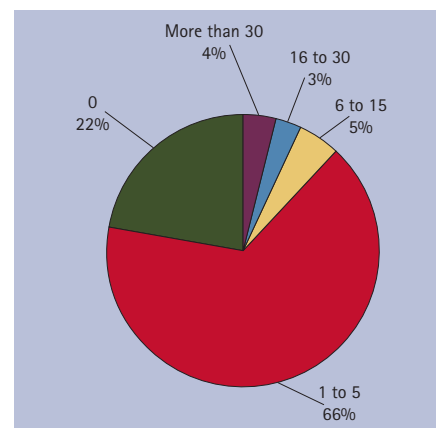


Fig. 3 Mandibular free-end saddles made in the last 12 months

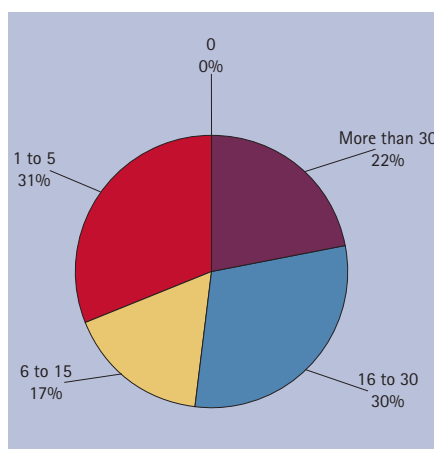


Fig. 4 Acrylic partial dentures made in the last 12 months

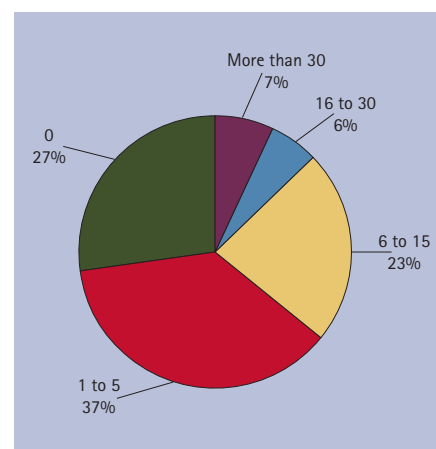


Fig. 5 Complete dentures made in the last 12 months

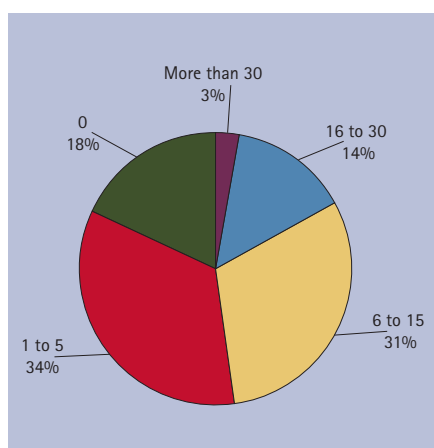


Fig. 6 Conventional bridges made in the last 12 months

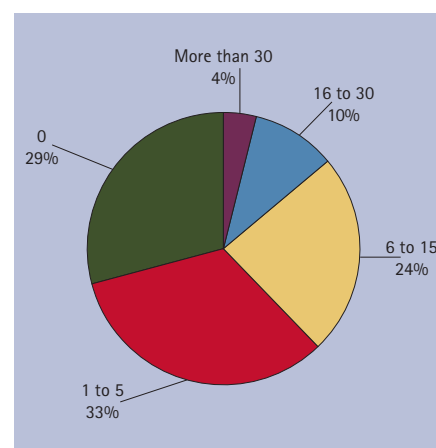


Fig. 7 Minimal preparation bridges made in the last 12 months

prescribed.⁹ Not surprisingly, more acrylic dentures were made in NHS general practices than in specialist private practices. A survey of 15 dental schools regarding teaching of removable partial dentures showed the average number of cobalt chromium and acrylic dentures made by students to be three and two, respectively, and most responses showed concerns

regarding the suitability of the patient for undergraduates.⁹ The trend was followed by most clinical techniques in fixed and removable prosthodontics apart from crowns. The number of crowns placed by this group was higher than for any other procedure and emphasises their importance for undergraduate teaching of these restorations. Partially dentate patients

can present significant challenges to the newly-qualified graduate due to the complexity of such cases. Teeth are retained for longer but affected by conditions such as caries, periodontal disease and tooth wear. Specialists in prosthodontics seem to be doing fewer dentures and concentrating more on implant-supported prostheses.

The number of bridges, in particular minimal preparation (resin bonded) bridges, made was low. This could be due to lack of training and perhaps the trust of GPs on their longevity.¹⁰ Perhaps the undergraduate curriculum needs to concentrate more on bridges in conjunction with the shortened dental arch for suitable patients.¹¹ Acrylic dentures were still favoured in NHS general practice and it would seem reasonable that teaching needs to continue in this area. Resin bonded bridges provide a conservative method of replacement of missing teeth and reduced soft tissue coverage, resulting in a restoration that induces less plaque retention than dentures. Teaching of these prostheses should continue and their use should be encouraged in appropriate cases.

The future teaching of complete denture prosthodontics is subject to continuing debate within dental schools in the UK. Most UK schools provide around four complete denture patients for training undergraduates and there are concerns about whether this relatively small number is sufficient to achieve competency.⁹ Arguably there are sufficient numbers currently practising on the GDC list to provide care for the future need of patients needing complete dentures. If the estimated numbers of patients needing complete dentures over the next few decades is accurate then teaching in dental schools could be directed towards other techniques. On the other hand, there are simpler methods such as copying

techniques which might reduce the teaching time but maintain clinical impact.⁷

At the start of the planning process the number of implants placed in general dental practice was suspected to be reasonably high. However, this was not supported by our findings and it appears that a relatively small group of practitioners is producing most of the implants. There is an increasing requirement for the new dental graduate to be familiar with appropriate case selection, the principles of surgical and restorative implant procedures, the early diagnosis and management of implant-related pathology (for example, peri-implantitis) and the maintenance of dental implants and their suprastructures. A survey of undergraduate teaching in implant dentistry found that dental implants were included in the curricula of all 13 dental schools that participated in the study, but marked variation was found in content and delivery. What the future interests of dentists are likely to be is unknown, but perhaps as implant teaching within dental schools increases the numbers will grow.⁸ A more recent survey of 15 dental schools showed that 13 provided some teaching of implants, eight of the 13 delivered the teaching as lectures and the rest allowed some clinical practice.¹²

CONCLUSIONS

1. The results of this study were obtained from a self-selected sample of dentists in the South East of England and therefore the results cannot be generalised
2. The number of removable partial and complete dentures provided is relatively low
3. Most metal dentures are made in private specialist practices and most acrylic partial dentures in NHS general

practices. The time taken to teach free end saddles may be better focused on other prosthodontic techniques

4. Conventional and minimal preparation bridges were more commonly prescribed than dentures and this raises the question of whether or not more effort in the curriculum could be focused towards them
5. The number of implant restorations carried out was low and teaching in this area may need to be revised if demand for implants increases.

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