

# A survey of the UK maxillofacial laboratory service: Profiles of staff and work

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## Abstract

We sent questionnaires to 98 maxillofacial laboratories in the United Kingdom and asked about the composition of their staff, the kind of work that they do, and their activities in relation to the treatment of disfigured patients who require facial and body prostheses. We received 59 replies about 193 laboratory staff, most of whom had 10 or more years experience and held basic and advanced qualifications in dental technology. Most laboratories did all sorts of work including maxillofacial, orthodontic, dental prosthetic and crown and bridge work. Only five confined themselves to maxillofacial work. One hundred and eighteen staff (61%) had contact with 4259 disfigured patients who required prostheses. Fifty-three laboratory managers (89%) thought that maxillofacial prosthetists and technologists gave psychological support to these patients, but only 12 laboratories (21%) had staff with formal training in counselling.

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## Introduction

Professionals in health care are obliged to review their work systematically, but there has been little review of the work of maxillofacial prosthetists.<sup>1</sup> It is a small profession; in 2002 there were only 147 maxillofacial prosthetists and technologists registered in the UK (personal communication, M. Cutler: honorary registrar, Institute of Maxillofacial Prosthetists and Technologists). The specific nature of the work carried out in maxillofacial laboratories and the balance between clinic and laboratory has not been documented. Modern maxillofacial laboratories provide services for many medical and dental specialties. Maxillofacial prosthetists and technologists provide prosthetic rehabilitation for disfigured patients, but the provision of prostheses forms only a part of their work, and the actual number of disfigured patients who are having prosthetic treatment is unknown.

We have tried to establish the work profile of maxillofacial prosthetic services in the UK. We set out to:

- explore job diversity within maxillofacial laboratories, including,
  - the kind of work undertaken,
  - the distribution of time between laboratory and clinical specialties;
- establish the number of disfigured patients being treated annually in the UK,
- the location and type of prostheses constructed;
- indicate the number of maxillary prosthetists and technologists involved in the clinical stages of the treatment of patients.

## Method

A questionnaire was devised that contained 19 questions (Appendix A), in a structured format divided into three sections:

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Table 1  
Basic and advanced qualifications held by maxillofacial prosthetists and technologists and dental technicians in UK maxillofacial laboratories (n = 49)

n = (%)	Maxillofacial prosthetists/ technologists	Dental technicians
Basic dental technology qualifications		
City and Guilds	66 (58)	27 (34)
Business and Technology Education-Council (BTEC) Degree	33 (29)	39 (49)
	17 (15)	6 (8)
Advanced qualifications		
City and Guilds advanced Higher National Certificate	71 (62)	29 (37)
Higher National Diploma	29 (25)	23 (29)
Higher Degree	21 (18)	16 (20)
	5 (4)	0 (0)

characteristics of staff;  
diversity of tasks;  
contact with disfigured patients.

Most of the questions were designed as closed, pre-coded (response options already set) and two options such as yes or no, to make the questionnaire as simple as possible to complete.

A list of names of laboratories was obtained through the professional body, The Institute of Maxillofacial Prosthetists and Technologists. The questionnaire was then posted to the managers of 98 maxillofacial laboratories in the UK. To maximise response the questionnaire included a supporting letter from the researchers that explained the purpose of the study and a prepaid return envelope. A follow up postcard was sent after 4 weeks. We asked the regional ethics committee for approval, but the information sought from participants was not deemed to be sensitive and was recorded routinely, so approval was not required.

## Results

### Staff

A total of 193 staff were employed at 50 hospitals (we excluded nine undecipherable returns). Of these 193, 114 (59%) were maxillofacial prosthetists and technologists and 79 (41%) were dental technicians. Of the dental technicians 56 (71%) were men and 23 (29%) women. Of the 114 max-

illofacial prosthetists and technologists 88 (77%) were men (n=) and 26 (23%) women.

NHS laboratory staff must hold a primary qualification in dental technology (Table 1). Secondary advanced qualifications are needed for more senior posts and when a person is specialising in a particular branch of dental technology. Maxillofacial prosthetists and technologists held more advanced qualifications than dental technicians.

Forty-seven of the 79 dental technicians (59%) had 10 or more years of experience in the specialty, the rest being either middle grade (5–9 years), or newly qualified (0–4 years). Fifteen dental technicians had undergone further study, including courses in management, teaching and practical-based laboratory courses. Most of the 114 maxillofacial prosthetists and technologists had 10 or more years of experience (n = 81, 71%) followed by newly qualified (n = 19, 17%) and then 5–9 years experience (n = 14, 12%). Their further courses included management, teaching and practically based laboratory courses.

### Work diversity

Maxillofacial prosthetics occupied 47% of an average working week, orthodontics 35%, dental prosthetics 17% and crown and bridge work only 1%. Almost half of all respondent laboratories (n = 27, 49%) did a combination of maxillofacial prosthetics, orthodontics and dental prosthetics work, but not crown and bridge (Table 2).

Specific tasks in maxillofacial prosthetics were listed to gauge the sort of work that was done. The results showed that most units complete a broad range of such tasks (Table 3).

### Contact with disfigured patients

More than half the laboratory staffs were reported to be directly involved in treating disfigured patients. Most of these had 10 or more years experience in the treatment of such patients. Respondents were offered a list of conditions that require prostheses, and they recorded the number of patients treated in 2002. The total number recorded as having been provided with these prostheses was 4259, but the range of the total number of patients who required prostheses was 492, and the mean total number of prostheses was 76 (S.D. = 92). This indicates a disparity in the results obtained. Information on the types of prostheses provided gave a picture of the

Table 2  
Combination of dental technology specialties in the UK maxillofacial laboratories (n = 55)

Number of valid returns (% of laboratories)	Maxillofacial prosthetics	Dental prosthetics	Orthodontics	Crown and bridge
27 (49.1)	◆	◆	◆	
11 (20)	◆	◆	◆	◆
6 (10.9)	◆		◆	
5 (9.1)	◆	◆		
5 (9.1)	◆			
1 (1.8)	◆	◆		◆

Table 3

Percentage of laboratories undertaking specific maxillofacial prosthetics tasks ( $n = 56$ )

Maxillofacial task	Laboratories (%)
Trauma appliances	88
Facial prostheses	86
Obturator	85
Specialist maxillofacial appliances	75
Body prostheses	69
Custom implants	55
Burns splints	37

Table 4

The number of patients reported as requiring specific types of prostheses ( $n = 56$ )

Prosthesis	Annual number of patients $n = (\%)$
Breast	58 (1)
Hand and finger	120 (3)
Body contour	148 (3)
Nasal	230 (5)
Orbital	265 (6)
Ocular	755 (18)
Maxillary	811 (19)
Auricular	815 (19)
Nipple	1057 (25)

various types of rehabilitation being undertaken in the UK (Table 4).

Laboratory managers were asked for their opinions about prosthetic rehabilitation. Maxillofacial prosthetists and technologists were said by 42 (89%) to provide psychological support to patients. When asked to explain the support offered to patients by maxillofacial prosthetists and technologists, content analysis was used to group the answers. Five key themes emerged from the analysis:

- Regular contact, building a relation with the patients ( $n = 15$ )
- Caring, listening and offering advice ( $n = 13$ )
- Technical support and explanations of treatment ( $n = 11$ )
- A good aesthetic result gives the patient reassurance and confidence ( $n = 5$ )
- Positive attitude towards the patient's disfigurement ( $n = 3$ )

Working with disfigured patients raises issues about the need for specific training. Twelve laboratories (21%) had 15 staff that had had some training in counselling skills. Forty managers (76%) said that they thought it would be beneficial for staff that had treated patients to have some form of training in counselling. One third said that they attended a support group, which was seen as further evidence of active participation in the patient's rehabilitation. The groups attended included 'Let's Face It' ( $n = 8$ ), 'Changing Faces' ( $n = 3$ ), 'About Face' ( $n = 1$ ), 'Guys and Dolls' ( $n = 1$ ) and four specific injury-related groups.

## Discussion

The 59 questionnaires that were returned comprised 63% of those sent out. We think that this is a representative sample.

Cartwright<sup>2</sup> recommended a 75% response rate as acceptable in questionnaire surveys, but a postal survey may reduce this by up to 20%.

The results show that most maxillofacial laboratories contain a mixture of staff; including more maxillofacial prosthetists and technologists (mean = 2.3) than dental technicians (mean = 1.6). This diversity of staff was not present in all units. There were 16 units who had no dental technicians, but only five of these units exclusively produced maxillofacial prosthetics. The other 11 units that had no one other than maxillofacial prosthetists and technologists spent half their time on other dental technician specialties (orthodontics, dental prosthetics and crown and bridge). This highlights the importance of the basic qualification and experience in dental technology for all staff.

Maxillofacial prosthetists and technologists hold more senior positions, they have more qualifications and they are generally older. More maxillofacial prosthetists and technologists had attended management training courses than dental technicians and the qualifications held by maxillofacial prosthetists and technologists were mainly the older City and Guilds ones. Job dissatisfaction is a major influence in turnover of staff<sup>3</sup> and the length of service that we found is an indicator of satisfaction for maxillofacial prosthetists and technologists.

Nearly all the units treated patients with facial disfigurement that required rehabilitation with facial prostheses. The definition of a "disfigured patient" should perhaps have been widened as one respondent added orthognathic patients to the list of disfigured patients treated.

We have no figures with which to make comparisons of changes in the working practices of maxillofacial laboratories. Although this list (Table 4) gives us an idea of the types of rehabilitation at the time of the study, it would be interesting to make a comparative longitudinal study of the cases over a 5-year period.

Respondents emphasised the support role of the maxillofacial prosthetists and technologists: one of caring, listening and offering advice to patients. The relationship that develops between maxillofacial prosthetists and technologists and patients was also illustrated by the numerous mention of the word "friendship". The maxillofacial prosthetist and technologist are long-term contact points for disfigured patients. Prolonged contact with patients makes these encounters "non-threatening" and "normal". The first social exposure the patient will experience is the interaction with the treatment team.<sup>4</sup> Desmond and MacLachlan<sup>5</sup> suggested that knowledge of psychological disorders is not required, but professionals should be aware of the psychological issues that influence the rehabilitation of their patients. The concept of specific training for maxillofacial prosthetists and technologists in behavioural treatment has not previously been explored but the undertaking of formal 'counselling' qualifications was supported by most respondents.

## Appendix A

The 19 questions asked in the survey.

- 1) How many members of staff work within your laboratory?
  - a) Maxillofacial Prosthetists =
  - b) Dental Technicians =
- 2) How many dental technicians are: male; female?
- 3) Of the dental technician staff how many have the following dental technology qualifications?
  - a) Basic dental technology; i) City and Guilds; ii) Business and Technology Education Council Diploma (BTEC); iii) Degree qualification
  - b) Advanced dental technology; i) City and Guilds; ii) Business and Technology Education Council Higher National Diploma (BTEC NHD); iii) Business and Technology Education Council Higher National Certificate (BTEC HNC); iv) Higher Degree (MSc, PhD)
  - c) In which specialties are the advanced certificates held? i) Orthodontics; ii) Crown and bridge; iii) Dental Prosthetics; iv) Maxillofacial Prosthetics
  - d) Does this group hold any other qualifications relevant for their current job? (e.g. management)
- 4) How many years dental technology experience does each member of your dental technology staff have? i) 0-4; ii) 5-9; iii) 10+
- 5) How many maxillofacial prosthetists are: male; female?
- 6) Of the maxillofacial prosthetics staff how many have the following dental technology qualifications?
  - a) Basic dental technology; i) City and Guilds; ii) Business and Technology Education Council Diploma (BTEC); iii) Degree qualification
  - b) Advanced dental technology; i) City and Guilds; ii) Business and Technology Education Council Higher National Diploma (BTEC NHD); iii) Business and Technology Education Council Higher National Certificate (BTEC HNC); iv) Higher Degree (MSc, PhD)
  - c) In which specialties are the advanced certificates held? i) Orthodontics; ii) Crown and bridge; iii) Dental Prosthetics; iv) Maxillofacial Prosthetics
  - d) Does this group hold any other qualifications relevant for their current job? (e.g. management)

- 7) How many years maxillofacial prosthetics and technology experience does each member of your maxillofacial prosthetics staff have? i) 0-4; ii) 5-9; iii) 10+
- 8) Which of the following categories of work is carried out within your laboratory?
- a) maxillofacial prosthetics; i) facial prosthetics; ii) body prosthetics; iii) obturators; iv) trauma appliances; v) custom made implants; vi) burns splints; vii) other specialist maxillofacial appliances
- b) dental prosthetics; c) orthodontics; d) crown and bridge
- 9) In the last year please estimate the percentage of your laboratory work load spent on; i) maxillofacial prosthetics; ii) dental technology; iii) orthodontics; iv) crown and bridge
- 10) During the last year how many members of the laboratory staff have carried out work with disfigured patients?
- 11) Of this group, how many are: i) supervised trainees; ii) full time; iii) part time?
- 12) How many years experience in treating disfigured patients do the qualified staff possess? i) 0-4; ii) 5-9; iii) 10+
- 13) How many disfigured patients (from the groups outlined below) did your laboratory treat with a prosthesis in the last year? i) ocular; ii) orbital; iii) nasal; iv) auricular; v) maxillary; vi) full/partial breast; vii) nipple; viii) body contour; ix) hand/finger
- 14) Does your unit routinely offer disfigured patients psychological support/counselling?
- 15) Do you feel your maxillofacial prosthetists and technologists contribute psychological support to patients?
- 16) Have you or your Laboratory Staff attended local 'Disfigurement Support' groups? e.g. "Let's Face It"
- 17) Have you or your staff (maxillofacial prosthetists and technologists) undergone any further training in Counselling?
- 18) Do you feel all maxillofacial prosthetists and technologists would benefit from formal training in Counselling?
- 19) In your Hospital, is there any support offered to staff that may have problems dealing with their work?

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