

# Professional careers of graduates from one UK dental school

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**Aim:** The aim of this study was to consider reported working patterns of dentists and retention of the dental workforce. **Method:** Three cohorts of dental graduates from the University of Birmingham (n=505) were tracked using the General Dental Council (GDC) register to assess retention of the workforce. A questionnaire was sent to these graduates to explore changes in working patterns over time and to investigate the factors which had influenced their choice of job location. **Results:** A high proportion (90.9%) of the dental graduates included in this tracking exercise were found on the GDC register on the census date. A slightly higher proportion of female graduates (10.3%) than male graduates (8.0%) could not be traced on the current register (p=0.37). A change in working patterns over time was demonstrated, with more general dental practitioners reporting a shorter working week. 'Availability of jobs' was the factor reported by most respondents to be important in determining job location. **Conclusion:** This study provides evidence of changing work patterns over time. Furthermore, although the majority of the study sample remained on the GDC register, there appeared to have been a gradual loss of subjects from the dental workforce over time. Changes such as these may affect the provision of services and the impact of investment in training. Further research in this area is warranted.

**Key words:** dental manpower, distribution, career mobility, geographic location, employment status, United Kingdom

## Introduction

Healthcare professionals are an important resource and an integral part of any healthcare system. Dentists' career decisions, driven by personal and professional aspirations, inevitably have an impact on the provision of dental services. To inform the planning of new services and appropriate workforce development, research into dentists' career decisions and practising location is warranted. Furthermore, given the high cost of training dentists, it is prudent to consider retention of the workforce over time.

Work in this field to date, both within the UK and on a global scale, has tended to focus on the career hopes and plans of newly qualified dentists, undergraduate dental students and applicants to dental schools, rather than more senior dentists (Cunningham and Qian, 2009; Davies *et al.*, 2008; Gallagher *et al.*, 2007a; 2009a,b; Stewart *et al.*, 2007). Gallagher *et al.* examined the aspirations of future dentists, referred to as the 'emerging dental workforce'; this work highlights the perceived importance of a favourable work/life balance and acknowledges that motivational factors differ between the genders and between generations.

Although there are limited data pertaining to dentists who have been qualified for a longer period of time, research of this type has been conducted amongst doctors. Recent publications reporting on the career pathways and intentions of all the doctors who qualified in the UK in 1977 and 1988 (Davidson *et al.*, 1998; Taylor *et al.*, 2008; 2010) show that 20 years after qualification a substantial proportion of female doctors work part-time but there is no evidence to support suggestions that more women than men give up medical practice (Taylor *et al.*, 2010).

It has been suggested that, after graduation, dentists have a tendency to stay and practise in the region where they undertook their training (Johnson *et al.*, 1979; Lennon and Sharples, 1979). It is of course possible that such associations are specific to the dental school and its location. Other factors such as place of upbringing and proximity to family and friends have also been identified as important determinants of practising location (Fyffe and Pitts, 1989; Silva *et al.*, 2006).

In recent years Geographical Information Systems (GIS) have been used to examine the distribution of the dental workforce (Boulos and Phillipps, 2004; McCormick *et al.*, 2008). McCormick *et al.* found that the highest dentist/population rate tends to be within a 2 mile radius of a dental teaching hospital. Recent work, looking at the composition of the dental workforce in the area surrounding the University of Birmingham, shows that just under half of the dental practitioners were local graduates (White *et al.*, 2009). This suggests that the presence of a dental school may have a positive effect on the supply of dentists to neighbouring areas.

The aim of this study was to consider reported working patterns of dentists and retention of the dental workforce, using graduates from the University of Birmingham as an example.

## Methods

Professional registration with the regulatory body, the General Dental Council (GDC), was used as an indicator of whether a dentist was still practising. Details of three cohorts of dental graduates from the University of Birmingham were obtained from pass and graduation

lists published by the university. The selected cohorts were the graduating years of 1984-1986, 1994-1996 and 2004-2006. The 2010 GDC register (online) was searched on 11<sup>th</sup> June 2010 to ascertain whether these individuals were still registered. Those who could not be found on the current register were assumed to be no longer working as dentists in the UK – they were then traced back through previous paper-based GDC registers to determine when they left the register. The period of time for which they remained on the register was determined and the characteristics of this group were considered, in terms of gender and year of qualification.

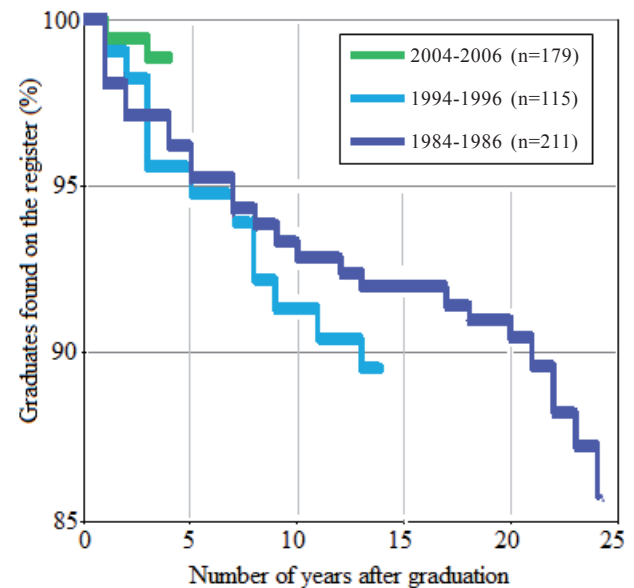
A questionnaire was piloted and a developed version posted to the three cohorts of dental graduates. Two full mailings were carried out for all cohorts. Questionnaires were anonymised. ‘Closed’ and ‘open’ questions were included as well as ranking scales on which respondents rated the importance of particular factors in their choice of job location. The questionnaire focused on the professional careers of the graduates; it also aimed to explore trends in working patterns over time by capturing data about jobs held and hours worked. Data from these questionnaires were entered into a database and analysed using the Statistical Package for Social Sciences (SPSS) v.17.0. Simple frequency statistics were calculated and comparisons between different year groups were made, using  $\chi^2$  tests to determine significance. The study proposal was approved by the University of Birmingham’s Life and Health Sciences Ethical Review Committee (ERN 09-915).

## Results

There were 505 graduates identified across the three cohorts. Due to changes in course structure there were only four graduates in 1994. Of the 505 graduates identified, 459 (90.9%) were found on the GDC register on 11<sup>th</sup> June 2010.

Table 1 displays the total number of graduates, by gender, in each of the selected year groups and the number who were not initially found on the GDC register. A smaller proportion of female graduates was observed in the 1984-1986 cohort than in the 2004-2006 cohort (38.4% vs. 57.5%,  $p < 0.001$ ). There was no significant difference ( $p = 0.37$ ) between female and male graduates in terms of proportions who could not be traced on the 2010 register – 10.3% and 8.0% respectively.

Those who could not be found on the 2010 register were traced back to determine when they came off the register or became untraceable because of a name change. Figure 1 illustrates the rate of apparent loss of graduates over time from each of the three cohorts.



Note: Those who appear never to have registered are included as a loss within the first year after graduation.

**Figure 1.** Apparent loss of graduates over time from the General Dental Council register, by cohort

**Table 1.** Graduates not found on the 2010 General Dental Council register, by graduating year and gender

Graduating year or cohort	Number and % of graduates in each year					Number and % of graduates not found on the 2010 register						
	Total		Male		Female		Total		Male		Female	
	n	%*	n	%*	n	%*	n	%*	n	%**	n	%**
1984	76	45	59.2	31	40.8	13	17.1	6	13.3	7	22.6	
1985	73	47	64.4	26	35.6	7	9.6	3	6.4	4	15.4	
1986	62	38	61.3	24	38.7	11	17.7	5	13.2	6	25.0	
1984 – 1986 cohort	211	130	61.6	81	38.4	31	14.7	14	10.8	17	21.0	
1994	4	2	50.0	2	50.0	0	-	0	-	0	-	
1995	49	21	42.9	28	57.1	5	10.2	3	14.3	2	7.1	
1996	62	33	53.2	29	46.8	7	11.3	3	9.1	4	13.8	
1994 – 1996 cohort	115	56	48.7	59	51.3	12	10.4	6	10.7	6	11.3	
2004	60	29	48.3	31	51.7	1	1.7	0	-	1	3.2	
2005	61	26	42.6	35	57.4	2	3.3	1	3.8	1	2.9	
2006	58	21	36.2	37	63.8	0	-	0	-	0	-	
2004 – 2006 cohort	179	76	42.5	103	57.5	3	1.7	1	2.2	2	1.9	
Overall	505	262	51.9	243	48.1	46	9.1	21	8.0	25	10.3	

\* Percentage of total graduates

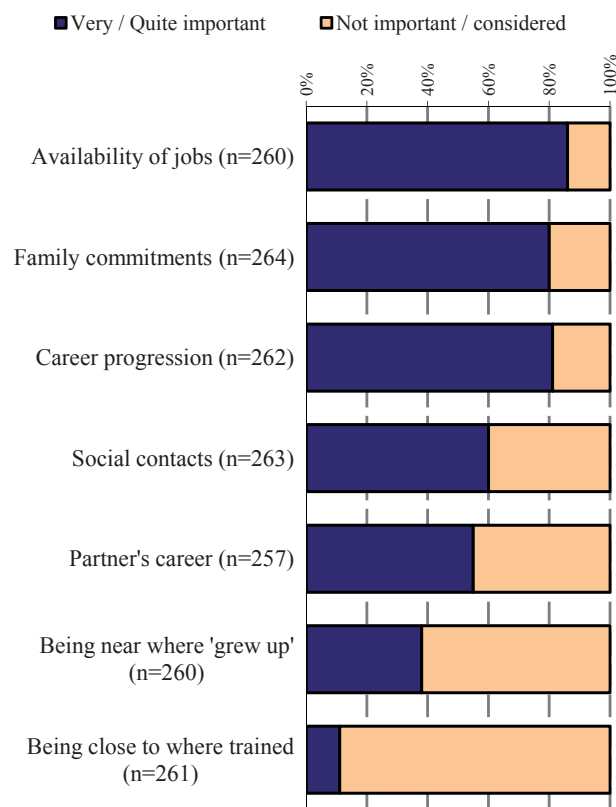
\*\* Percentage of graduates within gender

The two oldest cohorts demonstrate a similar trend over time with a relatively steady loss of graduates. The proportion of graduates who could no longer be traced on the register 4 years after graduation was not significantly different between all three cohorts. Comparisons were made between the 1984-1986 and 1994-1996 cohorts at 5, 10 and 14 years after graduating but no significant differences were detected.

Out of the 505 questionnaires distributed, 269 were completed and returned giving an overall response rate of 53.3%.

Respondents were asked to indicate what type of work they were doing at the time of completing the questionnaire. Thirty two respondents (11.9%) indicated that they worked across more than one sector. Four respondents reported that they were no longer working in dentistry and three of the respondents reported that they were on maternity or paternity leave.

The majority of respondents in each cohort were reported to be general dental practitioners (GDPs): 81.0%



**Figure 2.** Importance of factors influencing choice of job location

of the 1984-1986 group, 76.3% of the 1994-1996 group and 84.4% of the 2004-2006 group. Two hundred and fifty seven respondents (95.5%) had reportedly worked in general dental practice at some point. Data were collected from the two older cohorts about what they were doing 5 years after graduating. Chi-squared tests revealed that the only significant difference ( $p < 0.05$ ) between these two groups was in terms of the proportion of respondents who reported that they were undertaking postgraduate dental studies; 3.6% of the 1984-1986 cohort were reported to be enrolled in some form of postgraduate education 5 years after qualifying compared to 11.8% of the 1994-1996 cohort.

Graduates from 1984-1986 provided information about what they were doing five, ten and fifteen years after graduating. There were no significant differences (at  $p < 0.05$ ) between reported activity at 5 years compared to 15 years.

Those who were working as GDPs 5, 10 or 15 years after qualifying were asked to record the number of sessions they worked per week. There was a significant difference ( $p = 0.03$ ) between the 1984-1986 cohort and the 1994-1996 cohort in the proportions who reported that, 5 years after qualifying, they worked  $< 7$  sessions; 5.8% of the 1984-1986 cohort compared to 18.0% of the 1994-1996 cohort. Data from GDPs in the 1984-1986 cohort highlight a change in working patterns over time for this group of dentists (Table 2); the proportion who reportedly worked  $< 7$  sessions a week had risen significantly from 5.8% at 5 years to 21.1% at 15 years ( $p < 0.01$ ).

The graduates were asked to indicate the relative importance of a range of factors according to how influential each factor was in their choice of job location (Figure 2). 'Availability of jobs', described as 'very important' or 'quite important' by 85.8% of graduates, was rated the most influential factor; this was followed by 'family commitments', identified as 'very important' or 'quite important' by 79.6% of respondents. The two factors reported to have been least influential in determining job location were 'being close to where you grew up' and 'being close to where you trained as a dentist'; these were scored 'very important' or 'quite important' by only 37.2% and 11.5% of respondents respectively.

## Discussion

This study has contributed to the literature by offering some insight into the working patterns of dentists and providing valuable information about the duration of dentists' careers.

**Table 2.** Reported working patterns of general dental practitioners from the 1984-1986 cohort: 5, 10 and 15 years after graduating

Time since graduation	Number of sessions worked per week by number and % of general dental practitioners							
	<7 sessions		7/8 sessions		9/10 sessions		>10 sessions	
	n	%	n	%	n	%	n	%
5 years	4	5.8	9	13.0	46	66.7	10	14.5
10 years	10	14.5	8	11.6	42	60.9	9	13.0
15 years	15	21.1	17	23.9	35	49.3	4	5.6

The graduates' database analysis was limited to some extent by the assumptions which had to be made. One difficulty was the issue of name changes. It is important to acknowledge that some of the graduates who could not be traced on the 2010 register may in fact simply be registered under a different name. Furthermore, for those graduates who were found on the most recent register, an assumption was made that they had been on the register since graduating.

Selection of the 1994-1996 cohort for use in this study was unfortunate. The dental degree programme at the University of Birmingham was modified during this period to change from a four year course into a five year course thus only four students graduated in 1994. As the study had already commenced before the anomaly became apparent it was agreed that the project would continue as planned. It may be that the exclusion of the 1984, 1994 and 2004 year groups would have led to a more homogenous analysis however it would also have resulted in the loss of valuable data. This study was based on Birmingham graduates so the findings cannot be assumed to be representative of all dental graduates. Future work involving graduates from other dental schools would allow comparisons.

Although the questionnaire survey yielded some valuable information, it is important to recognise that one of the difficulties inherent in questionnaire surveys is that of non-response bias. The study design did not make it possible to evaluate the characteristics of those who did not respond.

The vast majority of each cohort was still registered to practise dentistry but a percentage of graduates in each of the three groups appeared to have been lost from the workforce.

Concerns that more women than men give up practising dentistry appear to be unfounded. There was no significant difference between the genders in terms of numbers who could not be found on the register on the census date. Furthermore, it is anticipated that some of the women who could not be found on the register may be registered under a different surname having assumed a new name on getting married. The findings of this project are consistent with those of Taylor *et al.* (2010) who reported no significant difference in the proportions of men and women who had given up medical practice. Given the increasing proportion of women in the dental workforce, demonstrated here by the change in proportion of female graduates over time, this is particularly reassuring.

The rate at which graduates were apparently lost from the register appears to be relatively similar for the two older cohorts - a fairly steady decline over the years. The 1984-1986 cohort had lost almost 15% of its graduates by the census date, twenty-four to twenty-six years after graduating. This is noticeably higher than the loss noted by Davidson *et al.* (1998) who reported on a questionnaire survey of UK doctors carried out eighteen years after graduating; 97% of the respondents in that study reported that they were still in medical practice. This did however include those in medical practice in the UK and abroad whereas registration with the GDC is only an indicator of those registered to practise dentistry in the UK and in fact may bear no relation to where they actually work.

The vast majority of respondents to the questionnaire survey reported that they had worked in general dental practice at some point during their career, with 81% currently working as GDPs. This corresponds with official figures showing that in England in 2004, 79% of NHS dentists worked in general dental practice while in Scotland in 2006, 84% of NHS dentists worked as GDPs (National Audit Office, 2004; NHS Education for Scotland, 2006). In contrast, recent work by Gallagher *et al.* (2009b) showed that, amongst final year students at a London dental school, there was a relatively low level of interest in becoming a primary dental care practitioner long term. Almost a third of the sample in this study anticipated becoming a 'dentist with a special interest' (DwSI). Furthermore, research published in 2007 revealed that many vocational dental practitioners (VDPs) considered becoming a DwSI to be an attractive option as it would enable them to avoid the boredom of repetitive generalist work (Gallagher *et al.*, 2007a). This yearning to avoid the potential limitations of general practice may partly explain why a proportion of the respondents to our questionnaire work across more than one sector. There is further evidence of this increasing desire to specialise or undertake additional training, with significantly more dentists enrolled in postgraduate studies (5 years after graduating) in the 1994-1996 cohort compared to the 1984-1986 cohort. Assuming this trend continues, a large proportion of the emerging dental workforce can be expected to enrol in postgraduate training soon after qualifying. This could have significant implications for primary care dentistry in the long term; capacity may be reduced and eventually a shift towards specialist services could alter the pattern of dental care delivery. Reasons for the rise in popularity of postgraduate training are unclear. It may be associated with a desire to avoid the perceived boredom of repetitive work in general practice. Alternatively, it may simply reflect an increase in the number of courses on offer or may relate to the GDC's introduction of mandatory requirements for continuing professional development in 2002.

According to the results of the questionnaire survey, recent graduates, working in general dental practice 5 years after qualifying, work fewer hours per week than dentists from the older cohort were doing at that same stage in their career. Furthermore, the study showed that dentists tend to reduce the number of sessions they work, over time. A similar trend for part-time working amongst primary dental care practitioners has been demonstrated elsewhere. In 2002, a Scottish study of primary dental care practitioners reported that 62% of the workforce worked full-time (Russell and Leggate, 2002). Gallagher *et al.* (2009b) demonstrated that just 60% of final year students at a London dental school anticipated working full-time in the long term; when questioned about the number of sessions, just over one third of respondents planned to work 10 or more sessions per week. It is also important to note that in this study significantly fewer female students indicated an intention to work full time. A reduction in levels of activity, such as this, may exacerbate any workforce shortages in the future. In view of the increasing numbers of women entering the profession, the difference between male and female contributions should be noted.

‘Availability of jobs’ was seen as an important determinant of practising location. The extent to which the introduction of the new dental contract in 2006 may have influenced responses is unclear. The importance of ‘family commitments’ in determining job location correlates with the findings of previous studies indicating the importance of ‘personal factors’ in career decisions (Fyffe and Pitts, 1989; Gallagher *et al.*, 2007a;b; Silva *et al.*, 2006).

The lack of importance placed on ‘being close to where you trained as a dentist’ is somewhat surprising. Work by McCormick *et al.* (2008) appeared to suggest that there was a tendency for graduates to practise locally. It may however indicate that dentists like to work in the vicinity of a dental teaching institute but not necessarily the one at which they trained. Working in proximity to a dental hospital may offer advantages including peer support, easier access to secondary care, opportunities for undergraduate teaching and increased availability of postgraduate training courses. It is also possible that new graduates may prefer to work in the area where they trained because they have settled into the locality; the proximity of the dental school being an associated factor rather than a causal factor. Furthermore, dental schools tend to be sited in major cities - graduates may be attracted by the social and cultural opportunities afforded by life in a big city, rather than the dental school. The presence of the dental school may not, in itself, be a factor in their decision making process but this does not diminish the positive influence that the presence of a dental school might have on the supply of dentists to the local area.

This research has identified some potentially important trends in dentists’ working patterns; the study should be repeated across other dental schools and with additional cohorts to see if the trends are generalisable. Successful workforce planning for the dental profession must be underpinned by an understanding of dentists’ working patterns and the factors which determine career decisions.

## Conclusion

This study provides evidence of changing work patterns over time, with more general dental practitioners reporting working less than full time. It has also demonstrated a progressive loss of subjects from the dental workforce over time. Changes such as these may affect the provision of services and the impact of investment in training. Further research in this area is warranted.

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