

Widening access? Characteristics of applicants to medical and dental schools, compared with UCAS

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VERIFIABLE CPD PAPER

IN BRIEF

- Provides an overview of the applicants and successful applicants to dentistry.
- Opens up the debate on 'widening access', particularly in light of increasing student fees and debt. We have done better than our medical counterparts in attracting students from non-private schools.
- It highlights a range of workforce issues and will enable dentists to advise young people who are interested in a dental career in about their chances of getting a place.

Aim The aim of this paper is to compare the demography (age, sex, ethnicity, social status) and academic experience (school type, tariff scores) of focused and successful applicants to preclinical dentistry with preclinical medicine, and with higher education in general in the UK. **Method** Retrospective analyses of anonymised University and College Admissions Services (UCAS) data for focused applicants whose preferred subject was preclinical dentistry or medicine, and accepted (successful) applicants to the same programmes in 2006. These data were compared with publicly available data on applicants and accepted applicants through UCAS. Information for each medical, dental and general UCAS applicant included age, sex, ethnicity, socio-economic group, region, school type and tariff score. Logistic regression was used to model the probability of being accepted in relation to all explanatory variables and interactions. **Results** In total there were 2,577 focused applicants to dentistry; 1,114 applicants were accepted, 4% (n = 46) of whom did not have it as their preferred subject choice. There were seven times as many focused applicants for medicine (18,943) when compared with dentistry; 8,011 applicants were accepted, 2.7% of whom did not have medicine as their preferred subject choice (n = 218). Just over half of the applicants to dentistry were from minority ethnic backgrounds (50.5%), exceeding medicine (29.5%), and higher education in general (19%). The proportion of female applicants was similar across all three groups at around 55%. Only one fifth (21%) of focused applicants to dentistry were mature compared with one third (33%) to medicine and one quarter (25.5%) of all UCAS applicants. Greater proportions of applicants to medicine (25.8%) and dentistry (23.5%) were from upper socio-economic backgrounds, compared with higher education in general (15.5%). When all other factors are controlled, the odds of being accepted for medicine, and for dentistry, are lower if mature, male, from a lower social class, from a minority ethnic group and have attended a further/higher education college. **Conclusions** Focused and successful applicants for preclinical medicine and dentistry are more likely to be from higher social classes and a minority ethnic background than applicants to higher education in general. Dentistry attracts twice the level of Asian applicants as medicine and four times that of universities in general. Controlling for other factors, there is evidence that gender, ethnicity, maturity, and school type are associated with probability of acceptance for medicine and dentistry. Higher social status is particularly associated with acceptance for medicine. The implications of these findings are discussed in terms of widening access and social justice.

INTRODUCTION

A central aim of the UK Government's education strategy has been to increase access to higher education (HE) for all sections of society.^{1,2} Access was defined by the Higher Education Funding Council for England (HEFCE) in 1996 as the

'widening of opportunity for students from non-traditional backgrounds and under-represented groups to ensure that people of any age, background or ethnic group are given a fair and equal opportunity to study in higher education'.^{1,2} In response, higher education [HE] institutions have endeavoured to widen access for medical students in particular³⁻⁶ as well as increase the number of places for students.⁷

The criteria used to select students for admission to UK medical and dental schools have received much attention, with debates over students' ethnicity, feeder schools and socio-economic status.^{4,8-13} McManus *et al.* analysed the ethnic variation of applicants to medical schools through UCAS in 1990

and concluded that people from ethnic minority groups applying to medical school were disadvantaged.¹¹ He went on to show that among applicants to medical schools, even when academic achievement is taken into account, older applicants, those from lower socio-economic groups and minority ethnic candidates were less likely to be accepted.¹⁰ Powis *et al.* assessed applicants to Nottingham Medical school from 1998-2003 and found that, notwithstanding a relatively homogenous applicant pool (predominantly white, young, high academic achievers), those from households that were less materially disadvantaged and those from independent or grant-maintained schools achieved higher tariff

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Table 1 Focused and accepted applicants to medicine, dentistry and UCAS by age, sex and ethnicity, 2006 (n = 432,196)

| Age | | Focused applicants | | | | Accepted applicants | | | |
|-----------------------------------|---|-----------------------|------------------------|--------------------|-------------------|-----------------------|------------------------|--------------------|-------------------|
| | | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² |
| <21 | N | 12,656 | 2,042 | 14,698 | 377,333 | 6,176 | 966 | 7,142 | 305,121 |
| | % | 67 | 79 | 68 | 74.5 | 77 | 87 | 78 | 78.1 |
| 21+ | N | 6,287 | 535 | 6,822 | 128,971 | 1,835 | 148 | 1,983 | 85,769 |
| | % | 33 | 21 | 32 | 25.5 | 23 | 13 | 22 | 21.9 |
| Sex | | | | | | | | | |
| Female | N | 10,569 | 1,410 | 11,979 | 277,121 | 4,702 | 637 | 5,339 | 210,334 |
| | % | 56 | 55 | 56 | 54.7 | 59 | 57 | 58.5 | 53.8 |
| Male | N | 8,379 | 1,167 | 9,541 | 229,121 | 3,309 | 477 | 3,786 | 180,556 |
| | % | 44 | 45 | 44 | 45.3 | 41 | 43 | 41.5 | 46.2 |
| Ethnicity | | | | | | | | | |
| Asian - Bangladeshi | N | 214 | 30 | 244 | 3,964 | 62 | 12 | 74 | 3,964 |
| | % | 1.1 | 1.2 | 1.1 | 0.9 | 0.8 | 1.1 | 0.8 | 1.1 |
| Asian - Chinese | N | 363 | 31 | 394 | 3,935 | 176 | 16 | 192 | 3,935 |
| | % | 1.9 | 1.2 | 1.8 | 0.9 | 2.2 | 1.4 | 2.1 | 1.1 |
| Asian - Indian | N | 1,468 | 617 | 2,085 | 16,977 | 653 | 272 | 925 | 16,977 |
| | % | 7.7 | 23.9 | 9.7 | 3.9 | 8.2 | 24.4 | 10.1 | 4.9 |
| Asian - Other Asian background | N | 770 | 153 | 923 | 5,289 | 278 | 45 | 323 | 5,289 |
| | % | 4.1 | 5.9 | 4.3 | 1.2 | 3.5 | 4.0 | 3.5 | 1.5 |
| Asian - Pakistani | N | 991 | 244 | 1,235 | 11,705 | 301 | 91 | 392 | 11,705 |
| | % | 5.2 | 9.5 | 5.7 | 2.7 | 3.8 | 8.2 | 4.3 | 3.4 |
| Black - African | N | 719 | 45 | 764 | 16,120 | 152 | 7 | 159 | 10,973 |
| | % | 3.8 | 1.7 | 3.6 | 3.7 | 1.9 | 0.6 | 1.7 | 3.2 |
| Black - Caribbean | N | 95 | 14 | 109 | 6,321 | 25 | 0 | 25 | 4,725 |
| | % | 0.5 | 0.5 | 0.5 | 1.5 | 0.3 | 0.0 | 0.3 | 1.4 |
| Black - Other black background | N | 50 | 2 | 52 | 1,536 | 7 | 1 | 8 | 1,110 |
| | % | 0.3 | 0.1 | 0.2 | 0.4 | 0.1 | 0.1 | 0.1 | 0.3 |
| Mixed - Other mixed background | N | 186 | 25 | 211 | 3,846 | 77 | 8 | 85 | 3,016 |
| | % | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 0.7 | 0.9 | 0.9 |
| Mixed - White and Asian | N | 262 | 28 | 290 | 3,755 | 136 | 13 | 149 | 3,045 |
| | % | 1.4 | 1.1 | 1.3 | 0.9 | 1.7 | 1.2 | 1.6 | 0.9 |
| Mixed - White and Black African | N | 47 | 5 | 52 | 1,376 | 17 | 3 | 20 | 1,053 |
| | % | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 |
| Mixed - White and Black Caribbean | N | 39 | 6 | 45 | 2,845 | 24 | 2 | 26 | 2,171 |
| | % | 0.2 | 0.2 | 0.2 | 0.7 | 0.3 | 0.2 | 0.3 | 0.6 |
| Other ethnic background | N | 377 | 100 | 477 | 4,681 | 135 | 34 | 169 | 3,541 |
| | % | 2.0 | 3.9 | 2.2 | 1.1 | 1.7 | 3.1 | 1.9 | 1.0 |
| Unknown | N | 3,985 | 380 | 4,365 | 21,833 | 979 | 84 | 1,063 | 19,872 |
| | % | 21.0 | 14.7 | 20.3 | 5.1 | 12.2 | 7.5 | 11.6 | 5.8 |
| White | N | 9,377 | 897 | 10,274 | 328,013 | 4,989 | 526 | 5,515 | 262,507 |
| | % | 49.5 | 34.8 | 47.7 | 75.9 | 62.3 | 47.2 | 60.4 | 76.0 |
| Total | N | 18,943 | 2,577 | 21,520 | 432,196 | 8,011 | 1,114 | 9,125 | 345,564 |
| | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Sources

1: UCAS applicants and accepted applicants data, 2006

2: www.ucas.com

point scores - the major entry criterion to UK medical schools.¹²

Bedi and Gilthorpe assessed the gender, ethnic variation and social background of successful applicants to medicine and dentistry between 1994 and 1997.^{8,9} They observed significant interethnic and gender differences, with dentistry being relatively more attractive to minority ethnic applicants, and the Indian community forming the largest minority ethnic group applying to medicine and dentistry. In their analysis on the social background of minority ethnic successful applicants to medicine and dentistry, Bedi and Gilthorpe found that black, Indian and white students were more likely to be from a higher social class background, whereas students from lower social class backgrounds formed the majority among the Bangladeshi, Chinese and Pakistani.⁸ They also found dental schools accepted a greater proportion of students from lower social class backgrounds and from black and minority ethnic groups than medical schools.⁹

Despite recent emphasis on 'widening access',^{2-4,6,14-17} and the opportunities provided by increasing numbers of medical and dental students,^{18,19} it is recognised that further action is required to enable fair access across social groups in society.^{5,18,20} This paper will contribute to the current debate by providing a comparative overview of recent data on age, gender, ethnicity, socio-economic status, region and school type of applicants to medicine, dentistry and UCAS in general.

The aim of this paper is to compare the demography (age, sex, ethnicity, social status) and academic experience (school type, tariff scores) of focused applicants and successful applicants to preclinical dentistry with preclinical medicine, and with higher education in general in the UK for 2006.

MATERIALS AND METHODS

University and Colleges Admissions Service (UCAS) is the central organisation through which applicants are processed for entry to full-time higher education undergraduate courses. Each applicant is permitted to make up to eight applications, but advised to select only five.²¹ UCAS provided data on all applicants whose preferred subject was preclinical medicine or dentistry during the academic year 2006 and all successful

applicants. The former were applicants that had preclinical medicine or dentistry listed most frequently in their subject choices and those who were successful applicants. Throughout this paper, 'applicants' refers to those who had medicine or dentistry as their 'preferred subject choice'. Data on all successful applicants to medicine and dentistry were provided, whether the subject had been their preferred choice or not. Comparative data for higher education as a whole were obtained from the UCAS website.²² Ethics committee approval was not required for this study.

Applicants over 59 years of age were excluded from the analysis ($n = 6$), because of concerns over data quality. Candidates were classified according to the main ethnic groupings in line with national approach.²³ Using the UCAS classification, applicants of 21 years of age or over were classified as 'mature'. Socio-economic status was provided according to the professional background of the head of the applicant's household, and categorised according to the Registrar General's Index of Social Class 2001.

The UCAS Tariff is a points system used to report achievement for entry to higher education (HE) in a numerical format. It establishes agreed comparability between different types of qualifications and provides comparisons between applicants with different types and volumes of achievement.

Univariate descriptive analyses were carried out for applicants and successful applicants to preclinical dentistry and medicine, and compared with all UCAS applicants and successful applicants in 2006. The data were described using frequency tables and means as appropriate. The main outcome of interest is the binary indicator of acceptance to a school - medical or dental. Logistic regression (simple and multiple) was used to model the probability of being accepted in a school in terms of all explanatory variables and possible interactions. Particular attention was paid to interactions between social class, ethnicity and age and maturity of the student.

RESULTS

In 2006, just over 20,000 ($n = 21,520$) focused applicants under 60 years of age applied to study medicine and dentistry

accounting for 5% of UCAS applicants (Table 1). There were just over one thousand successful applicants to dentistry ($n = 1,114$) and nearly eight thousand ($n = 8,011$) to medicine. Of the successful applicants to dentistry in the UK in 2006, 4.1% ($n = 46$) did not have their successful choice as their preferred subject, neither did 2.7% ($n = 218$) of successful applicants to medicine.

Age

Dentistry attracted a lower proportion of mature applicants (over 21 years of age) than UCAS as a whole, and medicine proportionally more: one fifth of dental applicants (21%) were 'mature' compared with a third to medicine (33%), and one quarter (25.5%) to UCAS (Table 1). Whilst the mode for applicants was 18 years, the average age of applicants to dentistry (19.8 years; range 16-49 years) was younger than medicine (20.8 years; range 16-58 years). A greater proportion of accepted (successful) applicants to dentistry (87%) were under 21 years of age, when compared with medicine (77%) and UCAS in general (78%).

Sex

In 2006, 55% of applicants to dentistry were female, which closely compares with both medicine and UCAS in general at 55%; however, a higher proportion of accepted applicants were female across medicine and dentistry when compared with UCAS (Table 1). Females predominated across most ethnic groups or were equivalent to males; however, males consistently exceeded females for focused and successful applicants to medicine among Bangladeshi's (62%; 58% males) and black-others (51%; 57%). In dentistry males consistently exceeded females in both focused and successful applicants from Bangladeshi students (53%; 58%).

Disability

Only 2% of applicants to dentistry and 3% applicants to medicine stated they had a disability, compared with 5.6% of all UCAS applicants. Of the accepted applicants, only 1.7% ($n = 19$) to dentistry and 2.8% to medicine had a disability ($n = 223$), compared with 5.4% ($n = 18,814$) to UCAS. The majority of reported disabilities related to dyslexia.

Table 2 Proportion of focused and successful applicants to pre-clinical medicine and dentistry in 2006, by ethnic group, compared with national population statistics

| ETHNICITY | Focused applicants | | | | Accepted applicants | | | | Population | |
|-----------|-----------------------|------------------------|--------------------|-------------------|-----------------------|------------------------|--------------------|-------------------|------------------------------------|-----------------------|
| | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² | UK General Population ³ | England 15-24 yr olds |
| Asian | 20 | 41.7 | 22.6 | 9.6 | 18.5 | 40.4 | 21.1 | 12.0 | 4.4 | 9.9 |
| Black | 4.6 | 2.4 | 4.3 | 5.6 | 2.3 | 0.8 | 2.1 | 4.9 | 2.0 | 3.4 |
| Mixed | 2.8 | 2.5 | 2.7 | 2.8 | 3.2 | 2.4 | 3.1 | 2.7 | 1.2 | 2.6 |
| Other | 2.0 | 3.9 | 2.2 | 1.1 | 1.7 | 3 | 1.9 | 1.0 | 0.4 | n/a |
| Unknown | 21.0 | 14.7 | 20.3 | 5.1 | 11.5 | 7 | 10.9 | 5.8 | n/a | n/a |
| White | 49.5 | 34.8 | 47.8 | 75.9 | 62.8 | 46.5 | 60.9 | 76.0 | 92.1 | 84.0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source 1: UCAS applicants and accepted applicants data, 2006

Source 2: www.ucas.com

Source 3: office of national statistics: Estimated resident population mid-2006, (experimental statistics) www.statistics.gov.uk

Ethnicity

In 2006, nearly half a million people applied to higher education in the UK through UCAS (432,196 people). The ethnic variation in these applicants is presented in Table 1 and summarised in Table 2 providing comparisons with medicine and dentistry medicine. Four fifths of all applicants to higher education identified themselves as white (75.9%); the largest minority ethnic group was Asian (9.6%). Medicine and dentistry attracted a lower proportion of white applicants (49.5% and 34.8% respectively) and a higher proportion of students of 'unknown' status (21% and 14.7%) (Table 2; Figs 1a-b). Thus, of all the applicants to dentistry in 2006, over half (50.5%) were from minority ethnic groups, compared with just under a third of applicants to medicine (29.5%). Table 2 suggests that the proportion of applicants from minority ethnic groups is higher than their respective proportion in the 18-24 year population of England.

The largest ethnic group, which accounted for over two fifths of applicants to dentistry, was Asian (41.7%), compared with one fifth of medical applicants (20%) and one tenth of all UCAS applicants (9.6%) (Tables 2-3). Of the applicants to dentistry, Indian applicants were the largest sub-group accounting for one quarter (24%) of all applicants, and 47.5% of minority ethnic applicants; this compares with 8% and 26% respectively for medicine (Figs 1-2).

Medicine attracted almost double the proportion of black applicants (4.6%)

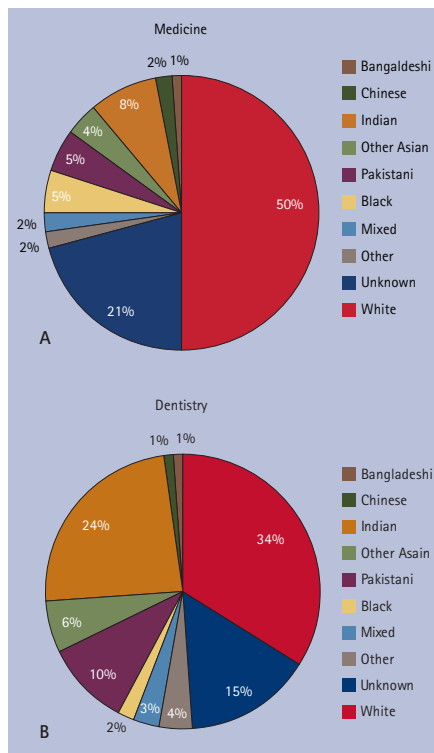


Fig. 1 Proportion of focused applicants to pre-clinical medicine and dentistry in the UK for each ethnic group, 2006. (a) Applicants to pre-clinical medicine in the UK by ethnic group, 2006 (n = 18,943); (b) Applicants to pre-clinical dentistry in the UK by ethnic group, 2006 (n = 2,577)

compared with dentistry (2.3%), both programmes attracting less black applicants than UCAS in general (5.6%) (Tables 2-3).

Whereas 34.8% of dental applicants were white, 47.2% of successful applicants were white. In marked contrast, 49.5% of applicants to medicine and 62.3% of the accepted applicants to medicine were white whereas only 25.7% were identified from minority ethnic groups; however, the

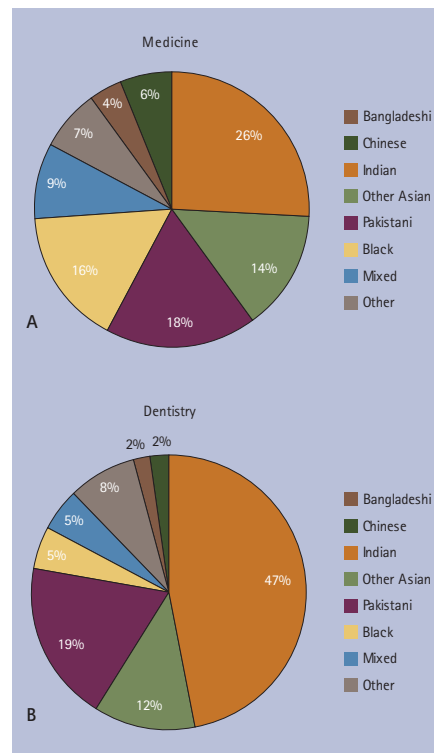


Fig. 2 Applicants to medicine and dentistry by minority ethnic background. a) Applicants to pre-clinical medicine by minority ethnic backgrounds, 2006 (n = 5,581); (b) Applicants to pre-clinical dentistry by minority ethnic backgrounds, 2006 (n = 1,300)

proportion of 'unknown' status, to medicine in particular is high.

Socio-economic status

Of the applicants to dentistry, 23.5% were from higher managerial and professional occupation backgrounds, similar to, but slightly less than, medical applicants (25.8%) (Table 3). For accepted applicants, this rose to 27.4% for dentistry and 34.4% for medicine

Table 3 Focused and accepted applicants to medicine, dentistry and UCAS by socio-economic group, 2006

| SE Status | | Focused applicants | | | | Accepted applicants | | | |
|--|---|-----------------------|------------------------|--------------------|-------------------|-----------------------|------------------------|--------------------|-------------------|
| | | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² |
| Higher managerial and professional occupations | N | 4,895 | 606 | 5,501 | 67,250 | 2,759 | 305 | 3,064 | 57,010 |
| | % | 25.8 | 23.5 | 25.6 | 15.6 | 34.4 | 27.4 | 33.6 | 16.5 |
| Intermediate occupations | N | 1,405 | 223 | 1,628 | 46,518 | 688 | 114 | 802 | 37,190 |
| | % | 7.4 | 8.7 | 7.6 | 10.8 | 8.6 | 10.2 | 8.8 | 10.8 |
| Lower managerial and professional occupations | N | 3,435 | 476 | 3,911 | 97,668 | 1,644 | 246 | 1,890 | 79,777 |
| | % | 18.1 | 18.5 | 18.2 | 22.6 | 20.5 | 22.1 | 20.7 | 23.1 |
| Lower supervisory and technical occupations | N | 250 | 67 | 317 | 15,113 | 112 | 35 | 153 | 12,258 |
| | % | 1.3 | 2.6 | 1.5 | 3.5 | 1.4 | 3.2 | 1.7 | 3.5 |
| Routine occupations | N | 294 | 73 | 367 | 19,490 | 106 | 30 | 142 | 15,267 |
| | % | 1.6 | 2.8 | 1.7 | 4.5 | 1.4 | 2.7 | 1.6 | 4.4 |
| Semi-routine occupations | N | 1,070 | 206 | 1,276 | 45,661 | 435 | 81 | 516 | 34,949 |
| | % | 5.6 | 8.0 | 5.9 | 10.6 | 5.4 | 7.3 | 5.7 | 10.1 |
| Small employers and own account workers | N | 502 | 125 | 627 | 24,524 | 239 | 62 | 301 | 19,771 |
| | % | 2.7 | 4.9 | 2.9 | 5.7 | 3.0 | 5.6 | 3.3 | 5.7 |
| Unknown | N | 7,092 | 801 | 7,893 | 115,972 | 2,016 | 241 | 2,257 | 89,342 |
| | % | 37.4 | 31.1 | 36.7 | 26.8 | 25.2 | 21.6 | 24.7 | 25.9 |
| Total | N | 18,943 | 2,577 | 21,520 | 432,196 | 8,011 | 1,114 | 9,125 | 345,564 |
| | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source 1: UCAS applicants and accepted applicants data, 2006
Source 2: www.ucas.com

(Table 3). In contrast, 15.6% of applicants and 16.5% successful applicants to UCAS were from this highest social background.

Region

Over 80% of applicants were from the UK with dentistry having the highest proportion of UK graduates (86.7%) (Table 4a). A minority of applicants and even fewer successful applicants were of international and other EU backgrounds. Of the UK applicants, the region with the greatest proportion of applicants to both medicine and dentistry was London, accounting for 22.8% and 27.5% of the UK total respectively (Table 4b; Fig. 3). The region with the lowest proportion of applicants was Merseyside for medicine (2.9%) and the North East of England (2.7%) for dentistry.

Successful applicants were more likely to come from the UK, particularly for dentistry (93.5%) compared with 90% for medicine and UCAS (Table 4a). Within the UK, the region with the greatest proportion of successful applicants was London ranging from 15.6% for UCAS up to 24%

Table 4a Focused and accepted applicants to medicine and dentistry by international region, 2006

| Region | | Focused applicants | | Accepted applicants | |
|---------------------|---|--------------------|-----------|---------------------|-----------|
| | | Medicine | Dentistry | Medicine | Dentistry |
| UK | N | 15,239 | 2,233 | 7,175 | 1,042 |
| | % | 80 | 86.7 | 89.6 | 93.5 |
| Other EU | N | 1,594 | 142 | 230 | 18 |
| | % | 8.4 | 5.5 | 2.8 | 1.6 |
| Other/International | N | 2,110 | 202 | 606 | 54 |
| | % | 11.1 | 7.8 | 7.6 | 4.8 |
| Total | N | 18,943 | 2,577 | 8,011 | 1,114 |
| | % | 100 | 100 | 100 | 100 |

Source: UCAS applicants and accepted applicants data, 2006

for dentistry (Table 5; Fig. 3). The region with the lowest proportion of successful applicants was Merseyside with 1.8% of medical and 2.7% of dental applicants.

School type

Of the applicants to medicine in 2006, 27% of applicants came from an 'unknown'

school type (the largest group), compared with 16.5% of applicants to dentistry and 25.8% of all UCAS applicants (Table 5). 'Unknown' school types were more common among older and overseas applicants.

The school type with the greatest proportion of applicants to medicine was

Table 4b Focused and accepted applicants to medicine, dentistry and UCAS by region, 2006

| Region | | Focused applicants | | | UCAS ² | Accepted applicants | | | |
|--------------------|---|-----------------------|------------------------|--------------------|-------------------|-----------------------|------------------------|--------------------|-------------------|
| | | Medicine ¹ | Dentistry ¹ | Total ¹ | | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² |
| East Midlands | N | 852 | 137 | 989 | 159,769 | 400 | 55 | 455 | 30,579 |
| | % | 5.6 | 6.1 | 5.7 | 7.2 | 5.6 | 5.3 | 5.5 | 7.8 |
| Eastern | N | 1,175 | 114 | 1,289 | 84,850 | 571 | 59 | 630 | 19,232 |
| | % | 7.7 | 5.1 | 7.4 | 3.8 | 8.0 | 5.7 | 6.7 | 4.9 |
| Greater London | N | 3,478 | 615 | 4,093 | 394,355 | 1,261 | 250 | 1,511 | 61,043 |
| | % | 22.8 | 27.5 | 23.4 | 17.8 | 17.7 | 24.0 | 18.4 | 15.6 |
| Merseyside | N | 276 | 69 | 345 | 70,903 | 131 | 28 | 159 | 12,045 |
| | % | 1.8 | 3.1 | 2.0 | 3.2 | 1.8 | 2.7 | 1.9 | 3.1 |
| North East | N | 442 | 60 | 502 | 100,353 | 209 | 35 | 244 | 18,753 |
| | % | 2.9 | 2.7 | 2.9 | 4.5 | 2.9 | 3.4 | 3.0 | 4.8 |
| North West | N | 1,221 | 260 | 1,481 | 199,595 | 587 | 114 | 701 | 35,932 |
| | % | 8.0 | 11.6 | 8.5 | 9.0 | 8.2 | 10.9 | 8.5 | 9.2 |
| Northern Ireland | N | 648 | 122 | 770 | 59,828 | 420 | 84 | 504 | 8,569 |
| | % | 4.2 | 5.5 | 4.4 | 2.7 | 5.0 | 8.0 | 6.1 | 2.2 |
| Scotland | N | 1,114 | 137 | 1,251 | 212,323 | 679 | 103 | 782 | 35,318 |
| | % | 7.3 | 6.1 | 7.2 | 9.6 | 9.4 | 9.9 | 9.5 | 9.0 |
| South East | N | 2,065 | 198 | 2,263 | 239,114 | 960 | 78 | 1,038 | 45,317 |
| | % | 13.6 | 8.9 | 13.0 | 10.8 | 13.4 | 7.5 | 12.6 | 11.6 |
| South West | N | 1,127 | 84 | 1,211 | 177,276 | 559 | 39 | 598 | 30,973 |
| | % | 7.4 | 3.7 | 6.9 | 8.0 | 7.8 | 3.7 | 7.3 | 7.9 |
| Wales | N | 698 | 108 | 806 | 107,683 | 347 | 58 | 405 | 21,749 |
| | % | 4.6 | 4.8 | 4.6 | 4.9 | 4.8 | 5.6 | 4.9 | 5.6 |
| West Midlands | N | 1,178 | 186 | 1,364 | 179,567 | 550 | 82 | 632 | 29,825 |
| | % | 7.7 | 8.3 | 7.8 | 7.2 | 7.7 | 7.9 | 7.7 | 7.6 |
| Yorks & The Humber | N | 965 | 143 | 1,108 | 229,818 | 501 | 57 | 558 | 41,555 |
| | % | 6.3 | 6.4 | 6.3 | 10.4 | 7.0 | 5.5 | 6.8 | 10.6 |
| UK Total | N | 15,239 | 2,233 | 17,472 | 2,215,434 | 7,175 | 1,042 | 8,217 | 390,890 |
| | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source 1: UCAS applicants and accepted applicants data, 2006
Source 2: www.ucas.com

independent schools (19%) followed by comprehensive schools (16%). Of the applicants to dentistry, the proportions from comprehensive (20%) and independent schools (19.8%) were similar. For both medicine and dentistry, Sixth Form Centre pupils represented the lowest proportion of applicants (0.5% and 0.7% respectively).

Of the accepted applicants to medicine and dentistry in 2006, the greatest proportion came from independent (26.8% and 26.0% respectively), followed by comprehensive schools (18.3% and 23%). The

lowest proportion of successful applicants to medicine and dentistry came from Sixth Form Centres (0.5% and 0.5%).

In marked contrast, the greatest proportion of UCAS applicants came from Further/Higher Education (28.6%) followed by comprehensive schools (25.9%), with only 8.4% of applicants coming from independent schools. The greatest proportion of successful applicants to UCAS came from comprehensive schools (27%), followed by Further/Higher Education (26.7%), with 9% of successful UCAS applicants coming from independent schools.

The profile of tariff scores varied between subject areas with medicine having a higher proportion of admitted students with ≥ 480 points (36% cf 27%), whereas dentistry had a higher proportion in the mid-range with 300 to 479 (70% cf 59%), (Table 6).

Multi-variate analysis

Pre-clinical dentistry: successful focused applicants

Simple and multiple logistic regression of acceptance for dentistry are presented in Tables 7 and 8 respectively.

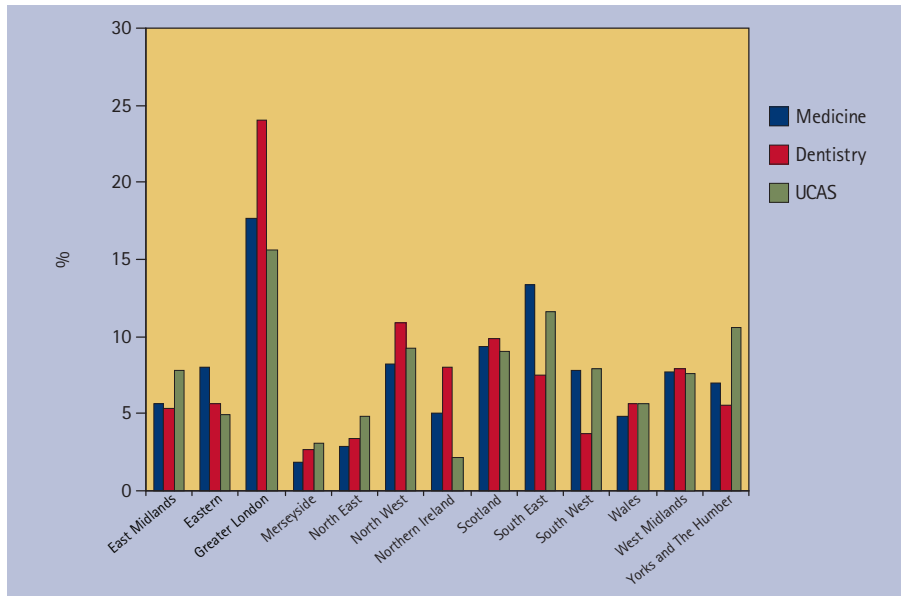


Fig. 3 Proportion of successful UK applicants to medicine, dentistry and UCAS by region, 2006 (n = 345,564)

On multiple logistic regression, the factors that retained significant association with the probability of being accepted

in a dental school related to the level of maturity (p = 0.02), ethnicity (p = 0.0001), gender (p = 0.01), and school type (p =

0.0001). The Hosmer-Lemeshow suggest that the model fits the data (Chi2(7) = 11.91, p = 0.16).

The odds of being accepted in a dental school decreased by:

- 33% (OR = 0.67, 95% ci 0.49 to 0.93) for mature students
- 22% (95% ci 0.66 to 0.93) for males
- 31% (OR = 0.69, 95% ci 0.48 to 0.98) for F/HE in relation to CS
- 36% (OR = 0.64, 95% ci 0.46 to 0.91, p = 0.01) for F/HE in relation to GS.

The odds of being accepted in a dental school increased by:

- 61% (OR = 1.61, 95% ci 1.25 to 2.07; p = 0.0001) for GS in relation to CS.

In relation to Indian ethnicity, the odds of acceptance decreased, on average, by 39% for other backgrounds (OR = 0.61, 95% ci 0.46 to 0.82; p = 0.001) and increased by 81% for white backgrounds (OR = 1.81, 95% ci 1.45 to 2.26 p = 0.0001).

Table 5 Focused and successful applicants to medicine, dentistry and UCAS by school type, 2006

| School type | | Focused applicants | | | UCAS ² | Accepted applicants | | | |
|--------------------------|---|-----------------------|------------------------|--------------------|-------------------|-----------------------|------------------------|--------------------|-------------------|
| | | Medicine ¹ | Dentistry ¹ | Total ¹ | | Medicine ¹ | Dentistry ¹ | Total ¹ | UCAS ² |
| Comprehensive School | N | 3,037 | 515 | 3,552 | 112,139 | 1,469 | 256 | 1,725 | 93,141 |
| | % | 16.0 | 20.0 | 16.5 | 25.9 | 18.3 | 23.0 | 18.9 | 27.0 |
| Further/Higher Education | N | 2,265 | 306 | 2,571 | 123,493 | 680 | 90 | 770 | 92,125 |
| | % | 12.0 | 11.9 | 12.0 | 28.6 | 8.5 | 8.1 | 8.4 | 26.7 |
| Grammar School | N | 1,537 | 246 | 1,783 | 21,206 | 926 | 138 | 1,064 | 18,130 |
| | % | 8.1 | 9.5 | 8.3 | 4.9 | 11.6 | 12.4 | 11.7 | 5.2 |
| Independent School | N | 3,598 | 510 | 4,108 | 36,143 | 2,148 | 290 | 2,438 | 30,983 |
| | % | 19.0 | 19.8 | 19.1 | 8.4 | 26.8 | 26.0 | 26.7 | 9.0 |
| Other | N | 583 | 74 | 657 | 8,986 | 190 | 34 | 224 | 6,658 |
| | % | 3.1 | 2.9 | 3.1 | 2.1 | 2.4 | 3.1 | 2.5 | 1.9 |
| Other maintained | N | 1,224 | 208 | 1,432 | 21,457 | 605 | 92 | 697 | 18,408 |
| | % | 6.5 | 8.1 | 6.6 | 5.0 | 7.6 | 8.3 | 7.6 | 5.3 |
| Sixth Form Centre | N | 99 | 17 | 116 | 2,887 | 42 | 6 | 48 | 2,404 |
| | % | 0.5 | 0.7 | 0.5 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 |
| Sixth Form College | N | 1,478 | 277 | 1,755 | 44,607 | 644 | 112 | 756 | 37,957 |
| | % | 7.8 | 10.7 | 8.2 | 10.3 | 8.0 | 10.1 | 8.3 | 11.0 |
| Unknown | N | 5,122 | 424 | 5,546 | 61,278 | 1,307 | 96 | 1,403 | 45,758 |
| | % | 27.0 | 16.5 | 25.8 | 14.2 | 16.3 | 8.6 | 15.4 | 13.2 |
| Total | N | 18,943 | 2,577 | 21,520 | 432,196 | 8,011 | 1,114 | 9,125 | 345,564 |
| | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Source 1: UCAS applicants and accepted applicants data, 2006
Source 2: www.ucas.com

Pre-clinical medicine: successful focused applicants

Simple and multiple logistic regression of acceptance for medicine are presented in Tables 9 and 10 respectively.

On multiple logistic regression, the factors that retained significant association with the probability of being accepted in a medical school related to the maturity of students ($p = 0.0001$), gender ($p = 0.0001$), ethnicity ($p = 0.0001$), social position ($p = 0.0001$) and school type ($p = 0.0001$) as shown in Table 10. The Hosmer-Lemeshow goodness of fit test suggested that the model presents a good fit to the data ($\text{Chi}^2(8) = 6.03, p = 0.64$).

The odds of being accepted in medical school decreased by:

- 79% (OR = 0.21, 95% ci 0.12 to 0.37) for mature students
- 23% (OR = 0.77, 95% ci 0.65 to 0.90; $p = 0.001$) for F/HE in relation to comprehensive school
- 22% (OR = 0.78; 95% ci 0.71 to 0.84, $p = 0.0001$) for males cf females.

The odds of being accepted in medical school increased by:

- 94% (OR = 1.94; 95% ci 1.49 to 2.52) for high class in relation to lower and middle class
- 89% (OR = 1.89, 95% ci 1.68 to 2.12; $p = 0.0001$) for independent schools and by 62% (OR = 1.62, 95% ci 1.41 to 1.86; $p = 0.0001$) for grammar schools and in relation to comprehensive schools
- 73% (OR = 1.73, 95% ci 1.41 to 2.11 $p = 0.0001$) for white applicants in relation to Asians of Indian background.

In addition, there was a social by ethnicity interaction ($p = 0.002$), the odds of being accepted decreased by 39% (OR = 0.61, 95% ci 0.46 to 0.80; $p = 0.0001$) for high class of white ethnicity and by 29% (OR = 0.71; 95% ci 0.50 to 1.01; $p = 0.06$) for high class of other ethnicity.

DISCUSSION

Limitations of this analysis

Only data on applicants for medicine and dentistry who had the preclinical courses A1 and A2 as their 'preferred subject choices' were analysed. Data were available

Table 6 Descriptive statistics for focused applicants to medicine and dentistry through UCAS in 2006, by subject area ($n = 8,861$)

| | Medicine | | | Dentistry | | |
|---------------------------------|--------------|-------------|--------------|-------------|-------------|-------------|
| | Rejected | Accepted | Total | Rejected | Accepted | Total |
| Sex | | | | | | |
| Female | 6,010 (54%) | 4,559 (59%) | 10,569 (56%) | 805 (53%) | 605 (57%) | 1,410 (55%) |
| Male | 5,140 (46%) | 3,234 (41%) | 8,374 (44%) | 704 (47%) | 463 (43%) | 1,167 (45%) |
| Disabled | | | | | | |
| N | 10,812 (97%) | 7,574 (97%) | 18,386 (97%) | 1,474 (98%) | 1,050 (98%) | 2,524 (98%) |
| Y | 338 (3%) | 219 (3%) | 557 (3%) | 35 (2%) | 18 (2%) | 53 (2%) |
| Mature | | | | | | |
| N | 6,631 (59%) | 6,025 (77%) | 12,656 (67%) | 1,120 (74%) | 922 (86%) | 2,042 (79%) |
| Y | 4,519 (41%) | 1,768 (23%) | 6,287 (33%) | 389 (26%) | 146 (14%) | 535 (21%) |
| Ethnicity | | | | | | |
| Indian | 822 (7%) | 646 (9%) | 1,468 (8%) | 346 (23%) | 271 (25%) | 617 (24%) |
| white | 4,466 (40%) | 4,911 (63%) | 9,377 (50%) | 400 (27%) | 497 (47%) | 897 (35%) |
| other asian | 1,537 (14%) | 801 (10%) | 2,338 (12%) | 297 (20%) | 161 (15%) | 458 (18%) |
| other back | 4,325 (39%) | 1,435 (18%) | 5,760 (30%) | 466 (30%) | 139 (13%) | 605 (23%) |
| Tariff | | | | | | |
| (1 to 299) | 958 (18%) | 221 (5%) | 1,179 (12%) | 259 (26%) | 24 (3%) | 283 (16%) |
| (300 to 479) | 3,493 (67%) | 2,558 (59%) | 6,051 (63%) | 659 (66%) | 560 (70%) | 1,219 (68%) |
| (480+) | 800 (15%) | 1,542 (36%) | 2,342 (25%) | 80 (8%) | 217 (27%) | 297 (16%) |
| Social class | | | | | | |
| High | 2,156 (37%) | 2,739 (47%) | 4,895 (42%) | 307 (34%) | 299 (37%) | 606 (35%) |
| Middle | 2,542 (44%) | 2,298 (40%) | 4,840 (42%) | 360 (40%) | 339 (42%) | 699 (41%) |
| Low | 1,110 (19%) | 756 (13%) | 1,866 (16%) | 236 (26%) | 168 (21%) | 404 (24%) |
| School | | | | | | |
| Comprehensive school (CS) | 1,597 (22%) | 1,440 (22%) | 3,037 (22%) | 280 (24%) | 235 (24%) | 515 (24%) |
| Further higher education (F/HE) | 1,607 (22%) | 658 (10%) | 2,265 (16%) | 218 (19%) | 88 (9%) | 306 (14%) |
| Grammar school (GS) | 623 (9%) | 914 (14%) | 1,537 (12%) | 111 (10%) | 135 (14%) | 246 (11%) |
| Independent school (IS) | 1,464 (20%) | 2,134 (32%) | 3,598 (26%) | 228 (19%) | 282 (28%) | 510 (24%) |
| Other school (OS) | 1,922 (27%) | 1,462 (22%) | 3,384 (24%) | 333 (28%) | 243 (25%) | 576 (27%) |

at applicant or application level and it was considered preferable to analyse UCAS data on 'focused applicants' to dentistry or medicine' in the UK as it provides a clearer picture of serious applicants. On average there are four applications per student to UCAS in general,²² with students encouraged to provide focused applications since they are

considered more seriously by dental and medical schools. Only a small percentage (2.7% successful medical and 4.1% of successful dental applicants) did not have one of these subject areas as their preferred choice. These findings therefore suggest that the majority of successful applicants to medicine and dentistry have a focused

Table 7 Simple logistic regression for acceptance of focused applicants to Dentistry (A2) in 2006 (n = 2,577)

| Accepted | Odds Ratio | 95% Confidence interval | | P-value |
|----------------------------|------------|-------------------------|-------|---------|
| Age | 0.90 | 0.87 | 0.92 | 0.0001 |
| Maturity | 0.44 | 0.36 | 0.54 | 0.0001 |
| Sex | 0.86 | 0.73 | 1.00 | 0.05 |
| Disability | 0.73 | 0.42 | 1.28 | 0.28 |
| Ethnicity | | | | 0.0001 |
| White vs Indian | 1.67 | 1.36 | 2.05 | 0.0001 |
| Other Asian vs Indian | 0.70 | 0.55 | 0.90 | 0.01 |
| Other vs Indian | 0.41 | 0.33 | 0.53 | 0.0001 |
| Social class | | | | 0.03 |
| Middle vs High | 1.01 | 0.81 | 1.25 | 0.95 |
| Low vs High | 0.74 | 0.57 | 0.95 | 0.02 |
| School Type | | | | 0.0001 |
| F/HE vs CS | 0.45 | 0.34 | 0.61 | 0.0001 |
| GS vs CS | 1.36 | 1.01 | 1.84 | 0.05 |
| IS vs CS | 1.39 | 1.09 | 1.77 | 0.01 |
| OS vs CS | 0.80 | 0.63 | 1.02 | 0.07 |
| Tariff | | | | 0.0001 |
| (300 to 479) vs (1 to 299) | 9.35 | 6.06 | 14.42 | 0.0001 |
| (480+) vs (1 to 299) | 31.16 | 19.10 | 50.84 | 0.0001 |

Source 1: UCAS applicants and accepted applicants data, 2006

Table 8 Multiple logistic regression for the acceptance of focused applicants to Dentistry (A2) in 2006 (n = 2,577)

| Accepted | OR | 95% CI | | P-value |
|-----------------------|------|--------|-------|---------|
| | | Lower | Upper | |
| Mature | 0.67 | 0.49 | 0.93 | 0.02 |
| School type | | | | 0.0001 |
| F/HE vs CS | 0.64 | 0.46 | 0.91 | 0.01 |
| GS vs CS | 1.28 | 0.94 | 1.74 | 0.12 |
| IS vs CS | 1.61 | 1.25 | 2.07 | 0.0001 |
| OS vs CS | 0.93 | 0.73 | 1.19 | 0.56 |
| Sex | 0.78 | 0.66 | 0.93 | 0.01 |
| Ethnicity | | | | 0.0001 |
| White vs Indian | 1.81 | 1.45 | 2.26 | 0.0001 |
| Other Asian vs Indian | 0.85 | 0.65 | 1.10 | 0.22 |
| Other vs Indian | 0.61 | 0.46 | 0.82 | 0.001 |

application, supporting the decision to analyse this restricted dataset, rather than all applications and highlighting the importance of prospective students' making a focused application for these courses.

The variables in this dataset provide a limited view of applicants and successful students as there are other important issues such as the quality of their application, supporting statements and the results of the new UKCAT tests,²⁴ which

are increasingly being used to choose professionals, together with performance in interviews and the level of competition for places at individual schools. It would have been interesting to assess if some schools are 'easier' to get into than others, ie some schools have far more applicants per place than others (are oversubscribed), or if location of the medical/dental school is an important factor in terms of characteristics of applicants, where families wish

or require their offspring to live at home for financial, cultural or other reasons. UCAS were unable to release these data in order to protect confidentiality. However, the findings of this paper will provide a benchmark against which schools can compare their own statistics, recognising that a wide range of issues are taken into consideration by Deans and Heads of Schools in admitting students and planning for the future.²⁵

The impact of missing data, which particularly related to older and overseas students, was a problem that impacts on the interpretation of the data. As 'graduate entry programmes' become more common, it would be appropriate to expand the dataset to collect information on existing qualifications such as primary degrees to provide a clearer view on university applications. The final point to note is that the dataset was limited to the main five-year medical and dental programmes and excluded the range of new shorter graduate entry programmes in medicine and more recently dentistry. Neither did it include extended programmes; however, to-date, dentistry has not actively promoted six-year programmes with a view to 'widening access'. Further work must be undertaken to examine the diversity across programmes as there have been extended programmes to 'widen access'^{2,3,6} and recent reports suggesting that graduate entrants to medical school attract different students and thus may facilitate academic and socio-economic diversity.³

Sex

Over half of applicants and successful applicants to medicine, dentistry and higher education in general in 2006 were female and the odds of gaining admission were higher for females in each aspect of higher education. When looking at UCAS data from 1994-97, Bedi and Gilthorpe found that approximately half (50.2%) of entrants to medicine and dentistry as a combined group were male.⁸ The data from 2006 presented here suggest that the feminisation of the professions, as determined by those entering medicine and dentistry, has increased by several percentage points. This development will have implications for workforce capacity in the longer term,²⁶⁻²⁸ unless there is compensation from the other routes of entry outlined above. There

is little difference to higher education in general, which now appears to attract, and admit, more females; an issue which has wider societal implications. However, the finding that female focused and accepted applicants are lowest from Bangladeshi community, where males predominate for both subject areas, is profiled in university students in general.²⁹

Ethnicity

The key messages of this research project are first that a high proportion of applicants (and successful applicants) to dental schools in the UK in 2006 were from minority ethnic backgrounds, the largest group being of Asian, and particularly Indian background; and second that this is particularly marked for dentistry, where nearly one half of applicants to dentistry nationally were from minority ethnic groups and two fifths were Asian. These findings confirm Bedi and Gilthorpe's analysis that dentistry was proving attractive to Asians, and in particular Indians, during the mid-1990s⁸ and demonstrate a further increase in this feature of applications to dental schools. They are in line with the findings of Connor *et al.* in a DFES Report examining higher education minority ethnic students.²⁹ The findings also confirm that medicine and dentistry do not appear to be particularly attractive to students from Black, Chinese or mixed race backgrounds.⁸ Connor *et al.* have reported that 'aspirations and expectations of the value of, and benefits from, higher qualifications is a more significant positive *driver* for minority ethnic than for white students, especially most Asian groups'.²⁹ An important consideration is the representativeness of the profession in relation to the future population. Given the large percentage of Asian students currently admitted to medicine and particularly dentistry, the ethnicity of these professions may be anticipated to be substantially different to that of the future population for at least the next 30-40 years. The findings also suggest that dentistry in particular has become less attractive to white students when compared with their size in the general population, and remains unattractive to black groups.⁸ The standing of dentistry as a profession appears to be different in different ethnic groups and this cannot just be explained

Table 9 Simple logistic regression for the acceptance of focused applicants to Medicine (A1) in 2006 (n = 18,943)

| Accepted | Odds Ratio | 95% Confidence Interval | | P-value |
|---|------------|-------------------------|-------|---------|
| | | Lower | Upper | |
| Maturity | 0.21 | 0.12 | 0.37 | 0.0001 |
| Sex | 0.78 | 0.71 | 0.84 | 0.0001 |
| School type | | | | 0.0001 |
| F/HE vs CS | 0.77 | 0.65 | 0.90 | 0.001 |
| GS vs CS | 1.62 | 1.41 | 1.86 | 0.0001 |
| IS vs CS | 1.89 | 1.68 | 2.12 | 0.0001 |
| OS vs CS | 1.08 | 0.96 | 1.22 | 0.17 |
| Social class High vs medium and Low | 1.94 | 1.49 | 2.52 | 0.0001 |
| Ethnicity | | | | 0.0001 |
| White vs Indian | 1.73 | 1.41 | 2.11 | 0.0001 |
| Other Asian vs Indian | 0.83 | 0.66 | 1.05 | 0.12 |
| Other vs Indian | 0.83 | 0.65 | 1.07 | 0.15 |
| Mature-by-ethnicity interaction | | | | 0.01 |
| White mature vs mature Indian and non-mature | 2.60 | 1.45 | 4.66 | 0.001 |
| Other Asian mature vs mature Indian and non-mature | 2.24 | 1.16 | 4.34 | 0.02 |
| Other background mature vs mature Indian and non-mature | 2.53 | 1.32 | 4.85 | 0.005 |
| Social-by-ethnicity interaction | | | | 0.002 |
| White high class vs high class Indian and lower and middle class | 0.61 | 0.46 | 0.80 | 0.0001 |
| Other Asian high class vs high class Indian and lower and middle class | 0.78 | 0.56 | 1.10 | 0.17 |
| Other background high class vs high class Indian and lower and middle class | 0.71 | 0.50 | 1.01 | 0.06 |

by the global disparity in the distribution of the dental workforce as dentist to populations ratios are low in both Asia and Africa.³⁰ Connor *et al.* suggest that for Asian families in particular, parental influence is important in their choice of medicine,²⁹ and confirm that most Asian groups are particularly keen on higher professional degrees. Scully and Wilson in their examination of ethnicity and culture, conclude that religious influences may be as strong, if not stronger than cultural ones in certain healthcare issues,³¹ and should perhaps be considered in future research. Such wider influences may, however, change with time in modern day society, according to the rate and extent of acculturation among different ethnic minority groups and future affirmative action in society at large.

Socio-economic status

It is well recognised that social class plays a significant part in educational attainment

and accessing higher education. Compared with all applicants to UCAS in 2006, more medical and dental applicants (and successful applicants) were from high socio-economic backgrounds; however, dental school applicants were more likely to be from a lower socio-economic status and from comprehensive schools than medical applicants. Furthermore, multivariate analysis confirms that the odds of being accepted for medicine are significantly greater for those applicants from higher social classes. This analysis confirms the findings of past studies that demonstrate an important effect of social class in gaining entrance to medicine,^{10,13} and that the social class effect in dentistry is not as marked as medicine.⁹ Recent attempts to examine the low application rate for medicine by Greenhalgh *et al.* suggest that socio-economic status can influence students' perceptions of medicine,³² based on qualitative research findings that suggest 'non-traditional' students, whose

Table 10 Multiple logistic regression for acceptance to Medicine (A1) for focused applicants in 2006 (n = 18,943)

| Accepted | Odds Ratio | 95% Confidence Interval | | P-value |
|---|------------|-------------------------|-------|---------|
| | | Lower | Upper | |
| Maturity | 0.21 | 0.12 | 0.37 | 0.0001 |
| Sex | 0.78 | 0.71 | 0.84 | 0.0001 |
| School type | | | | 0.0001 |
| F/HE vs CS | 0.77 | 0.65 | 0.90 | 0.001 |
| GS vs CS | 1.62 | 1.41 | 1.86 | 0.0001 |
| IS vs CS | 1.89 | 1.68 | 2.12 | 0.0001 |
| OS vs CS | 1.08 | 0.96 | 1.22 | 0.17 |
| Social class High vs medium and Low | 1.94 | 1.49 | 2.52 | 0.0001 |
| Ethnicity | | | | 0.0001 |
| White vs Indian | 1.73 | 1.41 | 2.11 | 0.0001 |
| Other Asian vs Indian | 0.83 | 0.66 | 1.05 | 0.12 |
| Other vs Indian | 0.83 | 0.65 | 1.07 | 0.15 |
| Mature-by-ethnicity interaction | | | | 0.01 |
| White mature vs mature Indian and non-mature | 2.60 | 1.45 | 4.66 | 0.001 |
| Other Asian mature vs mature Indian and non-mature | 2.24 | 1.16 | 4.34 | 0.02 |
| Other background mature vs mature Indian and non-mature | 2.53 | 1.32 | 4.85 | 0.005 |
| Social-by-ethnicity interaction | | | | 0.002 |
| White high class vs high class Indian and lower and middle class | 0.61 | 0.46 | 0.80 | 0.0001 |
| Other Asian high class vs high class Indian and lower and middle class | 0.78 | 0.56 | 1.10 | 0.17 |
| Other background high class vs high class Indian and lower and middle class | 0.71 | 0.50 | 1.01 | 0.06 |

parents did not go to university, perceive medical school as 'distant, unreal, and culturally alien'. Greenhalgh concluded that 'underachievement by able pupils from poor backgrounds may be more to do with identity, motivation, and the cultural framing of career choices than with low levels of factual knowledge'.³² She suggests that 'policies to widen participation in medical education must go beyond a knowledge deficit model and address the complex social and cultural environment within which individual life choices are embedded'.³² Furthermore, to attract students from socio-economically disadvantaged backgrounds, financial costs which act as a barrier to a five-year degree programme for socially disadvantaged students in particular,³² must also be taken into consideration; tuition fees^{33,34} and student debt,³⁵⁻³⁷ are very real issues for medical and dental students who have long programmes, diverse geographic placements and longer academic terms that limit students' opportunities

to earn money during their programme compared with their peers.

Region

London region provided the most applicants to medicine, dentistry and UCAS, which is not surprising as it has the highest population density in the UK, a high proportion of young adults,²³ and a high concentration of medical, dental and academic establishments. The high proportion of dental applicants from London is particularly marked, with analysis revealing the high proportion of minority ethnic applicants from this area. Connor *et al.* report the skewed institutional distribution of minority ethnic students,²⁹ particularly towards London. Their work also reveals that there is a strong family influence on the choice of higher education institution among Asian groups in particular.²⁹ This effect is clearly demonstrated in one London dental school where the majority of students are Asian.³⁵

Admissions

In their statement of principles in 2000, the Council of Heads of Medical Schools (now Medical Schools Council) indicated that the purpose of a medical education is to 'graduate individuals well fitted to meet the present and future needs of society for medical care'.³⁸ Admissions systems seek to achieve a fair and equitable system to select doctors of the future; however, these data from 2006 reveal that neither the applicants, nor successful applicants, are representative of their cohort in society. Angel and Johnson,³⁹ argue that the 'social, cultural and ethnic background of medical graduates should reflect broadly the diversity of the patient population', and that 'the groups of people that are under-represented in the medical profession tend to be overrepresented in the patient population who may be better served by doctors from these sub-populations'. Comparing the best data available, it would seem that the ethnic take-up by UCAS in general is more closely aligned with the young adult population in England (the best data available). Furthermore, the fact that more non-UK graduates are coming onto the medical and dental registers means that there is little possibility of the future profession being representative of the population.⁴⁰ If it is important to ensure fair access and social justice, then these data suggest that further action is required to attract a wider range of applicants into the professions. Alternatively, if as argued by Ip and McManus,⁴¹ 'there are more important issues at stake in medicine such as "standards", to which may be added "professionalism in caring for patients of different cultural and ethnic backgrounds", than merely having ethnic or social representativeness' then social representativeness should perhaps be moderated. Others argue that there should be social justice and equal opportunity,¹⁴ which can be facilitated by widening access schemes. In their defence, proponents of widening access suggest that it does not weaken the medical profession,^{6,15} rather it enhances it. Clearly, this is a need for joined-up initiatives encompassing an understanding of students' motivation for choice of career and professional aspirations, future workforce needs and possible policies on admission, to better ensure effective workforces in medicine and dentistry and facilitate the most appropriate

students into these programmes to serve population health needs. Few would argue about informed choice, including awareness of the pressures of medicine;⁴² however, we live in a fast changing world and medicine and dentistry of the future may require different attributes; for example, it will be interesting to observe if the anticipated changes in skill mix in dentistry, with dentists assuming more of a leadership role, will have an influence in years to come.²⁸

Given the findings of this paper, it is important to note that with little formal emphasis on 'widening access',⁴³ dentistry is consistently appearing to attract Asians and more so than medicine. With four times the level of universities in general and twice as much as medicine, dentistry has been particularly effective at attracting Asians, notably Indians, to undergraduate programmes. Further research is identified to understand what is making dentistry so attractive to Asians and unattractive to white and black university applicants? Interestingly neither medicine nor dentistry appears to be attracting black candidates; this is particularly the case for dentistry. The need to attract more black students into dentistry has been identified in the USA and a range of initiatives including the establishment of mentoring programs, dental education outreach programmes, and student loan forgiveness programmes have been advocated,⁴⁴ which suggest that in the US this could be a socio-economic as much as an ethnic issue for society.

This paper is topical given the announcement in January 2009 that the Government has established a task force to look at widening social access to medicine and dentistry.^{20,45} Given the findings of this paper, professional and government initiatives do need to be directed at attracting applications from a wider range of social and school backgrounds and certain ethnic groups to support its goal of 'widening access' to all areas of higher education. However, action on these issues needs to be underpinned by further research, and informed action, to ensure that people from under-represented groups who have the ability, motivation and professional characteristics to study for a professional career have the opportunity to do so, thus ensuring social justice.

CONCLUSIONS

Applicants to preclinical medicine and dentistry in 2006 were more likely to be from a higher socio-economic and a minority ethnic background than applicants to higher education in general. However, compared with applicants to preclinical medicine, applicants to preclinical dentistry were much more likely to be from a minority ethnic background (notably, Asian), younger and from a lower socio-economic status and from comprehensive schools. Dentistry attracted twice the level of Asian applicants as medicine in 2006 and four times that of universities in general. Controlling for other factors, there is some evidence that gender, ethnicity, maturity, social status and school type are associated with probability of acceptance for medicine and dentistry. Higher social status is more markedly the case for successful applicants to medical school rather than dental school. Further research is required to understand changing patterns of motivation for medicine and dentistry as professional careers; this should inform professional and government initiatives directed at attracting potential applicants that are from currently under-represented groups to facilitate 'widening access' to professional higher education and social justice.

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