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ABSTRACT

This paper, written at the close of a decade of democracy in South Africa, sets out to analyse the demographic profile of dental graduates from 1985-2004 at the five Faculties/Schools of Dentistry in South Africa. A comparison of the profiles for the pre-democracy (1985-1994) and post-apartheid (1995-2004) periods has been made. The demographic profile of first year dental students from 2000-2005 is also presented. From 1985-1994, most dental graduates were male (79%), but this changed substantially from 1995-2004, with females comprising 46% of those graduating. In the pre-democracy period, more than three-quarters of all graduates were White (78%), decreasing to 46% in the post-apartheid period under review. Black graduates increased from 6% to 24% across the two study periods. Amongst the first year dental student intake from 2000-2005, females comprised 57%. There was an almost equal distribution across the White, Black and Asian groups.

Dental faculties/schools have made important strides in transforming the demographic profile of their students. The percentage of Black graduates, however, needs to be significantly increased if it is to reflect the national population. Faculties/schools must further ensure that able students from working class background are identified and considered for acceptance into the undergraduate dental programme, and should then be offered the necessary academic and mentoring support to enable success.

INTRODUCTION

Prior to the first democratic elections in 1994, education in South Africa from primary through to tertiary levels developed along separate and unequal racial lines. Parliamentary Acts, for example, the Extension of the University Act of 1959, restricted access especially to tertiary education for Black, Asian and Coloured (non-White) students.[a] The national census of 2001 showed that 79% of the total population was Black, 9.6% White, 8.9% Coloured and 2.5% Asian.[1] In 2001, only 8.4% of the population of 20 years or older had access to higher education. Among the White population, more than a quarter (29.8%) reported having a higher education compared with 5.2% and 4.9% of Black and Coloured people respectively. Half of all White men were employed in managerial and professional occupations compared to 12% of Black men. 46% percent of White women were in managerial and professional occupations compared to 17% of Black women.

A national survey of dentists in 1989 showed that the majority were White and male.2 The University of Witwatersrand (Wits) qualified the first dentists trained in South Africa in 1927.3 From 1927 to 1995, Wits graduated 1916 dentists. Of these, 116 (6%) were females and 127 (7%) were Black, Chinese, Coloured or Asian.

An analysis of first-year intakes into dental schools in 1992 and 1994 at the five dental schools in South Africa also showed inequities with regard to gender and race.4 In 1994, at all schools except the University of the Western Cape (UWC), male students were in the majority. At the University of Pretoria (UP) 78% of the intake was White and no Black or Coloured students were admitted. At the University of Stellenbosch (US) 84% of the student intake in 1994 was White, and no Black students were admitted. Even though changes in the demographic profile of students did occur from 1992 to 1994, the distribution at dental schools was not representative of the wider population.

After ten years of democracy, the demographic (gender and race) profiles of dental graduates in the Faculties/Schools of Dentistry at UWC, US, MEDUNSA, Pretoria and Wits from 1985-2004 were analysed and the profiles for the pre-democracy (1985-1994) and post-apartheid (1995-2004) periods were compared. The gender and race distributions of first year dental students from 2000-2005 are also presented.

The data on the gender and race distribution of dental graduates from 1985-2004 and the first year intake from 2000-2005 were requested from the Deans of the dental faculties/schools. The Deans requested the data from the student administration of the various universities. All the data were then collated and the race and gender distributions of the dental graduates for the two study periods (1985-1994 and 1995-2004) were analysed by university. The

race and gender frequency distributions of the first year intake were analysed for the period 2000-2005 by university.

RESULTS

From 1985 to 2004, the five dental training institutions graduated a total of 3353 dentists. Table 1 shows that males comprised almost two-thirds of dental graduates during this period. The gender distribution has, however, changed substantially since 1994. The percentage of female graduates more than doubled from 21% to 46% in the two study periods. At UWC more females than males graduated as dentists after 1994, increasing from 21% in the period 1985-1994 to 51% in the period 1995-2004.

Table 2 shows that the majority of dental graduates in the years 1985-2004 were White (59%). In the pre-democracy period more than three-quarters of all graduates were White (78%), decreasing to 46% in the post-apartheid period. Across the two study periods the percentage of Black graduates increased from 6% to 24%. After 1994, US and UP dental graduates remained predominantly White (85% and 89% respectively). The proportion of Coloured (7%) and Asian (8%) graduates from 1985-1994 was small. The proportion of Asian graduates, however, increased substantially to 22% from 1995-2004. In the post-apartheid study period, 51% of the Wits graduates were Asian, up from 15% in the earlier study period. Table 3 shows that more females were accepted for first year dentistry from 2000-2005, and exceeded 60% at Wits and UP. At four of the five dental faculties/schools, the intake of Black students remained low, ranging from 1% at US to 20% at UWC. UP appears to have made considerable progress in its intake of Black students. Between 1995 and 2004, two percent of the graduates at UP were Black (Table 2), but 19% of first year students for the years 2000-2005 were Black (Table 3). At Wits, two-thirds of the first year intakes during this period were Asian students.

DISCUSSION

Globally, socio-economically disadvantaged groups experience a disproportionate level of oral health problems compounded by restricted access to health care.[5,6] One of the solutions proposed to reduce the problem of access in these groups is to have a workforce that reflects the diversity of the population.The need to attract, recruit, and retain underrepresented groups con-

TABLE 1: Number and percentage of dental graduates by gender and university, 1985-2004

University	Period	Males	Females	Total
		N (%)	N (%)	
UWC	1985-1994	138 (79%)	36 (21%)	174
	1995-2004	163 (49%)	172 (51%)	335
US	1985-1994	238 (79%)	64 (21%)	302
	1995-2003[b]	213 (59%)	146 (41%)	359
MEDUNSA	1987-1994	32 (63%)	19 (37%)	51
	1995-2004	244 (59%)	171 (41%)	415
UP	1985-1994	352 (80%)	87 (20%)	439
	1995-2004	277 (54%)	236 (46%)	513
Wits	1985-1994	283 (81%)	65 (19%)	348
	1995-2004	207 (51%)	201 (49%)	408
Period totals	**1985-1994**	**1043 (79%)**	**271 (21%)**	**1314**
	1995-2004	**1104 (54%)**	**926 (46%)**	**2030**
Total		**2147 (64%)**	**1197 (36%)**	**3344**[c]

TABLE 2: Number and percentage of dental graduates by racial group and university, 1985-2004

University[d]	Period	Coloured	Black	Asian	White
		N (%)	N (%)	N (%)	N (%)
UWC	1985 - 1994	89 (54%)	9 (5%)	65 (40%)	1 (1%)
	1995 - 2004	113 (34%)	97 (30%)	87 (27%)	31 (9%)
US	1985 - 1994	2 (1%)	0	0	296 (98%)
	1995 - 2003	37 (10%)	0	17 (5%)	304 (85%)
MEDUNSA	1987 - 1994	0	56 (93%)	3 (5%)	1 (2%)
	1995 - 2004	4 (1%)	308 (74%)	100 (24%)	3 (1%)
UP	1985 - 2004	0	0	0	439 (100%)
	1995 - 2004	2 (<0.5%)	12.2%	40 (8%)	459 (89%)
Wits	1985 - 1994	2 (1%)	12 (3%)	53 (15%)	281 (81%)
	1995 - 2004	7 (2%)	59 (14%)	207 (51%)	135 (33%)
Period totals	**1985 - 1994**	**93 (7%)**	**77 (6%)**	**121 (9%)**	**1018 (78%)**
	1995 - 2004	**163 (8%)**	**476 (24%)**	**451 (22%)**	**932 (46%)**
Total		**256 (8%)**	**553 (17%)**	**572 (17%)**	**1950 (59%)**

Footnotes:

a. ***Previously all people in South Africa were classified into four racial groups (Black, Asian, Coloured and White) according to the Population Registration Act of 1950. The use of these terms in this paper does not imply legitimacy but are useful in the proportional delineation of the dental graduate population in relation to the broader population.***

b. ***The School of Dentistry at US was incorporated into the Faculty of Dentistry at UWC on the 1st January 2004, the figures for US are therefore for the period 1985-2003.***

c. ***The gender status of 9 students was not known.***

d. ***The race classification of 22 students was not known***

tinues to pose a challenge. The Institute of Medicine (IOM) report: "Dental Education at the Crossroads", recommends that "dental schools should initiate or participate in efforts to expand the recruitment of under-represented minority students, faculty, and staff".[7] The IOM study further states that the creation of a dental workforce and faculty that reflects the nation's diversity is a goal only partially achieved at this time in the United States. The vast majority of United States dental schools have consistently failed to enrol students from under-represented minority groups at rates commensurate with their proportion in the general population.[8,9] In South Africa, the demography of professionals reflects the racial divisions enforced by the apartheid system. Historically, the dental faculties/schools were established to train dentists by racial groups, and thus the demographic profile of the graduates clearly reflects this apartheid-era legacy. Since 1994, the percentage of Black graduates has increased. However, the numbers must be further enhanced if they are to reflect the racial distribution of the population. This imperative is further emphasised when analysing the low intake of Black students at four of the five institutions. There is an urgent need to increase the percentage of Black students recruited into the dental training institutions. Whether the profiles of graduates were similar or different to other health care professions was difficult to ascertain due to lack of available aggregated national data, as in this study. Data from a single medical school showed that 35% of 1st year students in 2005 were Black and 35% White. The Black and White groups made up 46% and 20% respectively of the application pool.

However, increasing the intake of Black students will not, on its own, be adequate to ensure equity. Two further factors should be considered – throughput rate and access for students of working class origin. It is not enough for dental faculties/schools to have policies that delimit an intake quota for Black students. Throughput, and the quality of that performance, also requires scrutiny. Although many historically White universities have increased their intake of Black students, the vast majority of these students are tending to pass at the level below 54%, and many of these marks are achieved on the basis of supplementary examinations.[10] Clearly, it is incumbent on universities to put interventions in place to provide academic support for disadvantaged students, the vast majority of whom still attend schools that are inadequately resourced in terms of teacher expertise, science laboratories, computer facilities and libraries.[11,12]

Kapp[10] warns that an increase in the intake of Black students may not explicitly address class access for all South Africans. She notes that increasing numbers of Black learners are now schooled in elite, historically White schools. These students, she argues, have relatively few difficulties adjusting to the linguistic demands and cultural complexities of historically white higher education institutions. As the number of these students continues to grow, there could be a danger that universities may favour their admission at the cost of working class students who have up to now gained entry to tertiary institutions through alternative admissions programmes.[10] Empirical evidence from the United Kingdom suggests that enabling university access for working class learners will remain a challenge for a while to come.

Universities may need to expand their foundation of bridging courses to enhance the likelihood of success for students from disadvantaged backgrounds and to facilitate the transformation process. This should preferably be done after students are found to be struggling ("pull-out system"), and will then also include students from advantaged backgrounds who also need academic support. For example, at UP, students who do not meet the minimum admission criteria can enter a "BSc extended programme" where they complete foundation courses in mathematics, physics and chemistry and can then apply for dentistry. They also offer a foundation year for learners with potential who are intensely tutored and then offered a place in the dentistry programme.

Further issues that need to be investigated are the profiles of matriculation candidates who meet the admission criteria and application pools for dentistry by gender and race. Although pass rates have significantly increased in the last few years, less than 20% of candidates achieve a university endorsement pass.[14,15] There is also a need to improve pass rates in mathematics and science, both admission requirements for dentistry. The demographic profile and academic achievements of applicants for dentistry needs to be continually analysed. For example at UWC, about 20% of the 400 applicants for dentistry for 2005 were Black; however less than 10% were in the top 200 in terms of academic achievement. There is therefore a need to market and attract bright and talented applicants – especially from the disadvantaged communities - to the dentistry profession.

In the early years, graduates were almost exclusively male, but this has also significantly changed in the last decade. Dental faculties/schools are now generally graduating more female than male dentists.

TABLE 3: Number and percentage of first year dental students (2000-2005) by gender, racial group and university

University	Male	Female	Coloured	Black	Asian	White	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N
UWC	202 (48%)	221 (52%)	113 (27%)	83 (20%)	171 (40%)	56 (13%)	423
US	108 (49%)	112 (51%)	18 (8%)	1 (1%)	16(7%)	185 (84%)	220
MEDUNSA	127 (44%)	160 (56%)	2(1%)	226 (79%)	39 (14%)	20 (7%)	287
UP	138 (36%)	246 (64%)	11(3%)	73 (19%)	57 (15%)	243 (63%)	384
Wits	99 (39%)	156 (61%)	3(1%)	41 (16%)	173 (68%)	38 (15%)	255
Total	**674 (43%)**	**895 (57%)**	**147(9%)**	**424 (27%)**	**456 (29%)**	**542 (35%)**	**1569**

While the changes in the racial and gender distribution of the dentists graduating are encouraging, it does not automatically follow that this will result in equitable levels and types of employment for Black graduates and women. In South Africa, there are significant differences in the working patterns of male and female dentists.[16] In the United States, only 14% of active dentists are women.[17] Brown and Lazar[18] highlighted that these women have smaller net incomes than male dentists - even when adjusted for practice characteristics. Atchison and others[19] found that male dentists were more likely to serve in leadership positions (for example, as an officer in a dental society). Similarly, Silverton[20] indicated that women were under-represented in dental faculty positions, especially in full-tenure, tenure-track positions, and that the number of African-American women in academic dentistry was extremely small. The availability of role models and mentorship programmes may go some way to address these disparities as such mechanisms have been found to support the career aspirations of historically disadvantaged students.[21] The number of Black academic staff in the dental faculties/schools in South Africa is low, as is the number of women dental academics in senior positions (personal communication with Dental Deans). These shortcomings will have a detrimental effect on the potential for mentorship and role-modelling to develop capacity in Black graduates and women dentists. There needs to be a commitment by all dental schools to identify Black students, students of working class origin, and women with academic potential, and to groom them towards a career in academia. This process will not only assist in diversifying the staff profile, but also create an opportunity for role modelling, mentoring and support for students.

The Higher Education Act states, inter alia: "The admission policy of a public higher education institution must provide appropriate measures for the redress of past inequalities and may not unfairly discriminate in any way".[22] Dental training institutions in South Africa have addressed some of the equity issues relating to the representativeness of its undergraduate student population. There is a need for all dental schools to continually analyse demographic patterns of their application pools and intake, and make every effort to achieve representation of the broader population. Many of the recommendations suggested by Chikte and Brand[4] relating to targeting of schools, admission criteria, language and mentoring need to be continually considered in the endeavour to achieve equity in terms of gender, race and class in the selection of students into dental schools in South Africa.

Quotas alone will not be adequate to address the needs of a demographically representative body of graduate dentists. Hutchings[23] argues for the development of a curriculum in a South African idiom – catering for diverse student groups and diverse client communities. "The provision of adequate access should involve:

- the acknowledgement of diversity in terms of issues such as educational background, experience and language;
- consideration of this diversity in curricula assumptions, materials, resources and teaching practice – for example, with learner-centred, problem-based learning approaches that encourage multiple perspectives; and
- the foregrounding of student and client diversity in formulating a South African idiom of practice."

CONCLUSION

This study shows encouraging shifts in the demographic profile of dental graduates and first year undergraduate dental students. The numbers of women and Black students graduating and entering the dentistry programmes have notably increased since 1994. There remains a need to increase the number of Black students entering the dentistry programme if the proportion is to reflect the national population distribution. Dental schools/faculties also need to consider improving and/or strengthening existing academic and mentoring support of students and the development of curricula that cater for diverse student groups.

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