The changing medical student population at the University of Cape Town

R. P. Colborn, A. P. Kent, B. Leon

Objective. Since 1981, the composition of applicants and students admitted to the medical school of the University of Cape Town has changed gradually. The objective of this paper is to quantify these changes and explore possible reasons for them.

Design. A retrospective analysis of the actual data accumulated at each annual intake was performed and the trends determined.

Setting. Only data for the University of Cape Town medical school were evaluated. Data published by similar institutions were used for comparative purposes.

Results. The number of applicants has risen steadily from 1 229 in 1981 to 2 330 in 1994, so that the applicant/admission ratio now stands at 12,1:1. During this same period, the percentage of women in the class has increased, with women outnumbering men in both 1992 and 1993. In 1994, black African students comprised 24% of those admitted to the M.B. Ch.B. programme, and of these 30,4% were women. By comparison, their white colleagues constituted 45,3% of the class, 57,5% of this cohort being women.

Conclusions. The composition of the 1st-year M.B. Ch.B. class at the University of Cape Town has become multiracial in character, a factor achieved partly through academic support and affirmative action. The heterogeneity of the class, particularly in respect of gender, language and socio-economic factors, while appropriate and necessary, will have an impact on the university and the profession.

S Afr Med J 1995; **85:** 256-261.

The composition of the student body at the medical schools of South Africa has never reflected that of the community at large, in terms of race and gender. Historically there were customs and laws dictating the race of students who might apply for and be accepted at individual South African universities. Although legislation has never prevented

Faculty of Medicine, University of Cape Town

R. P. Colborn, M.B. CH.B., PH.D.

B. Leon, B.SC. HONS, PH.D.

Department of Obstetrics and Gynaecology, Groote Schuur Hospital, Cape Town

A. P. Kent, M.B. CH.B., M. PHIL., F.R.C.O.G.

women from entering medical schools, the social norms of the past and the selection procedures practised at certain universities have affected the gender distribution of medical schools, with men predominating.

Primary and secondary school education within South Africa has also been racially based, with the vast majority of black pupils receiving their tuition at schools administered by the Department of Education and Training (DET) and the Transkei Education Department (TK). These schools have been grossly under-funded, ill-equipped and overpopulated, and staffed by insufficient teachers, many of whom are poorly qualified. The recently disbanded tricameral parliamentary system made provision for coloured and Indian pupils each to have their own education departments, and these provided a standard of education more comparable to that available to white pupils. The changes envisaged in the education system will, it is hoped, eliminate the institutionalised inequalities of the past, but the legacy of many years of disadvantage will require time, social reconstruction, the development of the educational infrastructure and considerable finance to provide genuinely equal opportunity for all.

Concomitant with these political changes are changes in social and economic factors which appear to have made a career as a medical doctor more attractive to women and less attractive to white men.

The Faculty of Medicine, University of Cape Town

The University of Cape Town has consistently stated its opposition to discrimination on the grounds of beliefs, gender, race or religion, but government policy prevented black African students from entering the university's Faculty of Medicine until 1986.

Affirmative action and academic support

Initially, up to 44% of black African students who were accepted into the M.B. Ch.B. programme from 1986 onwards had suitable tertiary education that permitted them to gain access directly into the second year of study. The remainder were school-leavers who were selected mainly from the top achievers at DET and TK schools, even if their academic results were not competitive.

A totally inadequate number of black African students was admitted through this system, so the Faculty of Medicine of the University of Cape Town introduced an academic support programme to supplement the policy of affirmative action. This has found expression in the admissions policy. Applicants from DET and TK schools do not compete with other applicants for first-year places. They are admitted, in competition with each other, as participants of the Medical Academic Support Programme (MEDASP). This programme was started in 1991, with 22 students entering the first year. The numbers have been increasing each year since then, with 37 first-year students admitted in 1994. The programme is structured so that students take 4 years to complete the first 3 preclinical academic years, thus effectively reducing the curriculum load of each year. Social and financial support is provided, in addition to academic support, and although special teaching is given, MEDASP students attend most lectures, tutorials and practicals and sit the same examinations as students in the 3-year programme. In 1995, the Faculty will make the transition from academic support to academic development, which will retain appropriate features of MEDASP.

Student selection

Apart from the students admitted to the 4-year preclinical programme, selection at the University of Cape Town is blinded to race, religion and gender. Interviews are not used as part of the selection process. The logistics, financial considerations and doubts about the benefits and objectivity of the interview system have mitigated against its introduction.

For recent school-leavers, the selection mechanism in use is a points rating system whereby 80% of the points are derived from the matriculation results, and 20% are allocated on the grounds of a report on personal achievements other than academic ones. For students with some form of tertiary education, a variation of this system is used.

The basic admission requirement is a matriculation exemption, including passes in both mathematics and physical science. In practice, matriculants with less than a B aggregate and undergraduates who pass fewer than 75% of their subjects at first-class level do not gain admission. The actual subjects passed by undergraduate and graduate applicants are irrelevant and all possible subjects are weighted equally. Mathematics and physical science at matriculation level remain prerequisites, however.

Of the approximately 200 students in the first year, the average composition by groups over the last 4 years was: (*i*) school-leavers 79,0%; (*ii*) applicants with 1 year of tertiary education 8,6%; (*iii*) applicants with a university degree 6,8%; and (*iv*) repeating students 5,6%.

Results

The details of applicants for admission to the M.B. Ch.B. degree and those admitted were obtained from the official records of the University of Cape Town.

Applications

The number of applicants who fulfil the Faculty of Medicine's minimum admission requirements for the first year M.B. Ch.B. degree course at the University of Cape Town has increased steadily over the last 15 years. Selection only takes place when the applicant's matriculation or most recent tertiary examination results are received.

Applications fall into two categories: those from pupils who will matriculate at the end of the year in which they apply (school-leavers), and those from students who will have completed 1 or more years of tertiary education (tertiary-educated). To implement a policy of affirmative action, it is necessary to monitor trends specific to each racial group. Table I lists the applicants by racial group for the period 1986 - 1994.

Table I. New admissions to the first-year M.B. Ch.B. course at the University of Cape Town, 1986 - 1994

	1986	1987	1988	1989	1990	1991	1992	1993	1994
Black	7	7	10	6	10	30	35	40	46
Coloured	20	16	17	21	33	25	20	23	35
Indian	7	12	10	13	18	24	28	23	24
White	116	114	105	103	107	106	105	102	87
Total	150	149	142	143	168	185	188	188	192

Fig. 1 shows the number of school-leavers from the different racial groups applying for admission over the period 1986 - 1994, and Fig. 2 provides similar information for the tertiary-educated.

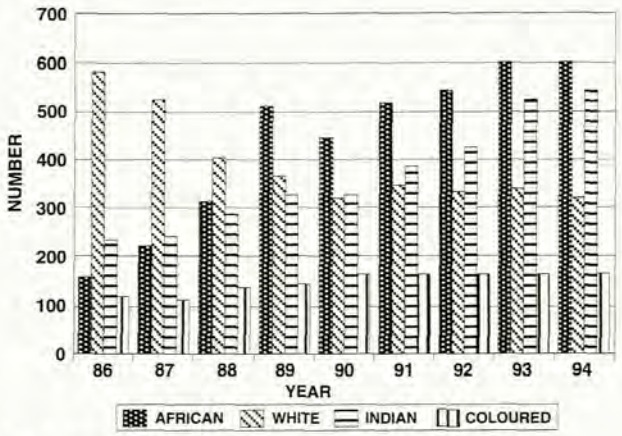

Fig. 1. Applicants — school-leavers.

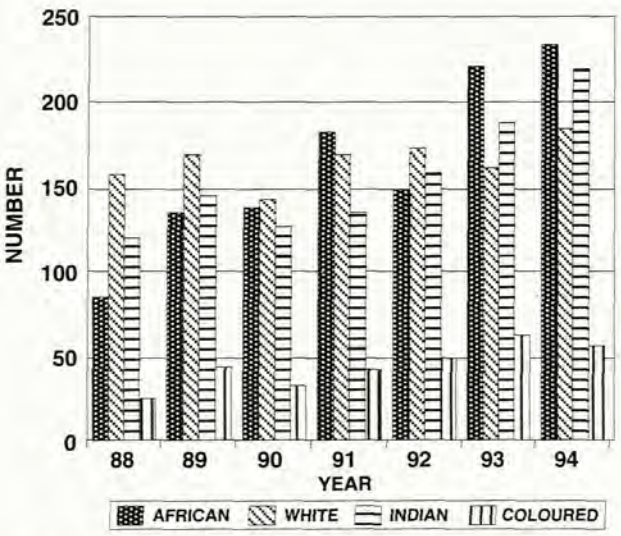

Fig. 2. Applicants — tertiary-educated.

Admissions

The total number of students in the first year of the M.B. Ch.B. programme ranged between 150 and 200 per year over the period 1986 - 1994. The proportion of the class made up of applicants with some tertiary education has increased and students are allowed to repeat their first year under special circumstances. The total number of new admissions to the first-year course is given in Table I.

From Table I, a decrease in white students is evident, in contrast to the increase in students from other racial groups. The Faculty changed the structure of the curriculum at the end of 1989, and in so doing significantly reduced the number of graduate students who were able to gain admission directly to the second year of study. From 1990 onwards virtually all students have to enter the M.B. Ch.B. programme at first-year level and for this reason the nominal size of the first-year class increased from 150 to 195 students.

The number of female and male students admitted each year over the period 1981 - 1994 is shown in Fig. 3. There is a marked increase in female students from 1990 onwards with female students outnumbering their male colleagues in 1992 and 1993. This latter trend appears to have reversed in 1994. Figs 4 and 5 show the breakdown of new admissions by racial group and gender.

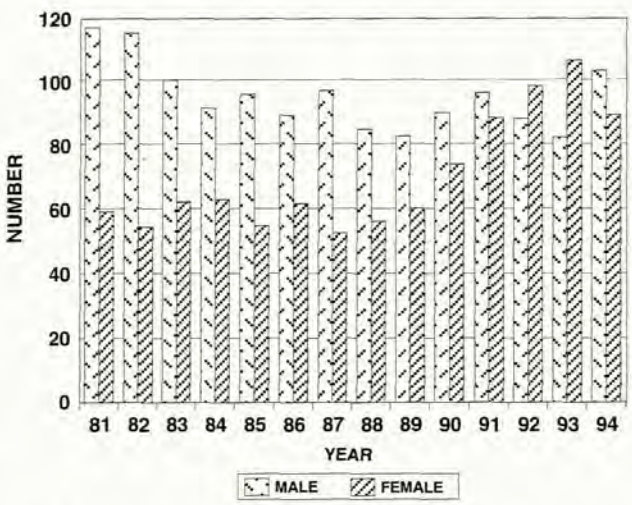

Fig. 3. Admissions by gender — first-year M.B. Ch.B.

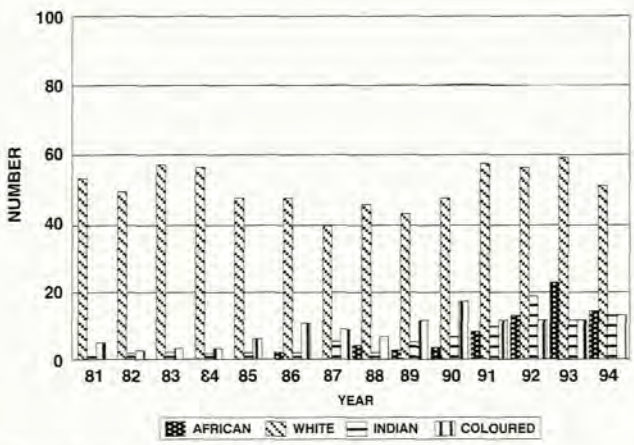

Fig. 4. Female admissions — first-year M.B. Ch.B.

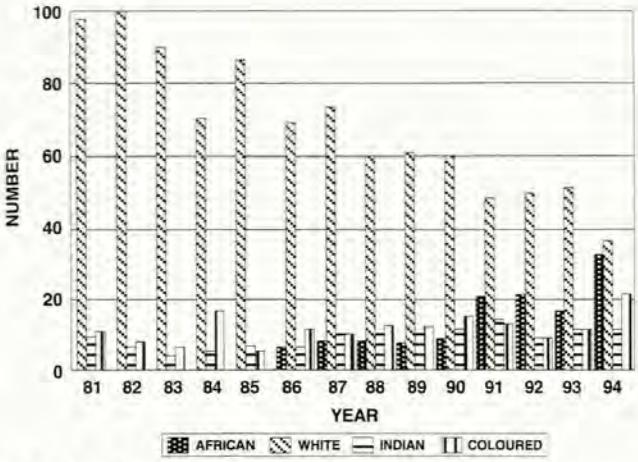

Fig. 5. Male admissions — first-year M.B. Ch.B.

Discussion

Applications

Over the period, 1981 - 1986, the number of applicants seeking to gain entry to the University of Cape Town M.B. Ch.B. programme remained relatively constant and averaged 1 318 per annum. Since 1986 there has been a gradual increase in applicant numbers, and, as shown in Figs 1 and 2, this increase is due primarily to a significant increase in applications from black and Indian school-leavers and those with tertiary education. Only a slight increase in coloured applications has occurred, while in contrast, applications from white school-leavers decreased markedly between 1986 and 1990, after which they remained relatively constant.

The increase in black African applicants can possibly be ascribed to an increasing awareness that the medical school was allowed to accept such applicants from 1986 onwards. Only a very limited number of black school leavers were, however, able to obtain places in open competition with other applicants and an affirmative action selection policy aimed at top black school-leavers and those black applicants with tertiary education was adopted. This policy had a minimal effect on numbers admitted and did not adequately address the issue of school leavers or their difficulty in adapting to the academic demands of the medical school. From 1991 onwards, affirmative action was supplemented by an Academic Support Programme which enabled the medical school to admit increasing numbers of educationally underprepared black school leavers and possibly further encouraged applications from this group.

There are no reasons that can easily be substantiated to account for the large increase in Indian applicants, who form a small proportion of the population in and around Cape Town and in the country as a whole. It is possible to speculate that this group perceives medicine as an increasingly attainable career choice, particularly following the improvement in secondary school education facilities made available to Indians during the 1980s.

The reasons for the decrease in white applicants are not clear, although difficulty in meeting the financial burden of a medical education[1] may be a factor, as well as the inadequate remuneration offered to doctors in the South African public sector,[2] which makes the repayment of loans a difficult task. The University of Cape Town applicant record system does not permit details of unsuccessful applicants to be grouped according to gender so that it cannot be determined directly whether fewer men than women are applying. The ratio of female/male admissions for the white group has, however, increased from 0,54:1 in 1981 to 1,39:1 in 1994, so that it may be deduced that relatively fewer men are applying, a trend similar to that noted in the USA.[3-5]

Admissions

Application/admission ratio

The 1994 figure of 2 330 applicants for the 192 available places, after allowance is made for repeating students, gives an overall application/admission ratio of 12,1:1. This appears to be in sharp contrast with the situation in the UK, where the ratio is 2:1,[6] a value similar to the 2,1:1 reported for the year 1992 in the USA.[7]

The application/admission ratio for the four racial groups applying to the University of Cape Town varies considerably. The average value over the 4-year period 1987 - 1990 for black applicants was 62,5:1, while that for white applicants was 4,9:1. This large discrepancy was due to the lack of competitiveness of black school-leavers. Over the period 1991 - 1994, affirmative action, accompanied by academic support, increased the percentage of blacks in the first-year class from 16,2% in 1991 to 24,0% in 1994. This trend appears to compare favourably with the 11% achieved in US medical schools acting in an affirmative manner,[8] but black applicants are the majority group in South Africa. This policy has enabled the UCT Medical School partially to redress the previous imbalance, and the application to admission ratio for the period 1991 - 1994 was 20,6:1 for blacks and 5,1:1 for whites. Financial constraints limit the extent of academic support within the medical school, but increased sources of bursary financing are being explored actively.

The application to admission ratio of 5,1:1 for whites appears to be significantly different from the value of 2:1 reported for the UK,[6] and 2,14 for the USA.[7] In South Africa, however, applicants do not apply to a central office, but are required to apply directly to the medical school of their choice, and applicants to the University of Cape Town Medical School will probably also have applied to other medical schools. The overall application to admission ratio for whites within South Africa is probably significantly less than 5,1:1.

The application to admission ratio for coloured applicants has averaged 8,4:1 over the last 4 years. Most applicants live in the Western Cape, and probably also apply to the University of Stellenbosch. The overall application to admission ratio for this group of students could therefore be significantly less than 8,4:1.

For Indian applicants, the application to admission ratio is 26,1:1. The majority of these applicants live in KwaZulu-Natal and the Transvaal, and apply to the medical schools in these regions.

The most competitive applicants probably gain admission to all the medical schools for which they apply and may

prefer to accept a place that is closer to home for both social and financial reasons, or choose a particular university for purely personal reasons.

Gender and racial consideration

Prior to 1971, women accounted for less than 15% of medical students at the University of Cape Town.[9] Since then the percentage of women admitted to the first year has gradually increased, reaching 32,7% by 1981 - 1982 and 37,8% by 1986 - 1987. This trend continued until 1992 when, for the first time, more than 50% of the class were women. In 1993, women constituted 56,4% of the class, but by 1994 this had decreased to 46,9%. This trend has occurred in the presence of a selection process that is blind to gender. In the period 1981 - 1982, 31,1% of students admitted to medical school in the USA were women, a figure similar to that for the University of Cape Town, and by 1992 this had increased to 39,8%.[3,10] By comparison, therefore, young South African women, as measured by the University of Cape Town experience, appear to be taking a more active involvement in medicine compared with their American counterparts, but fall far short of the 65% attained by Finnish women.[11] Perhaps, as far as South Africa is concerned, this relative increase in the number of female students reflects the perception by academically competitive women that there are rewarding career opportunities in the medical profession and a decrease in interest on the part of their male counterparts.

In 1981, the vast majority of the class was white (Figs 4 and 5), and this remained essentially unchanged until 1986 - 1987, when whites still constituted 76,9% of the class. By 1990, this figure had dropped to 63,4% in response to the policy of affirmative action and dropped further to 57,3% when this policy was supplemented by academic support. By 1994, white students constituted only 45,3% of the class. It is important to note that white male students had declined from 58% of the first-year admissions in 1981 - 1982 to 19,3% of all admissions and 36,3% of all male admissions by 1994. By comparison white female students have remained relatively constant (Fig. 4) at approximately 30% of the class, and by 1994 constituted 57,5% of all white admissions.

For the other racial groups the most significant changes have occurred for blacks, who were not represented at all prior to 1986. For the period 1986 - 1990, black students accounted for 5,3% of the class, despite affirmative action, but by 1994 had risen to 23,9% as a result of the introduction of academic support in 1991. On average, women have constituted 39% of black admissions over the period 1991 - 1994, in sharp contrast to the value of 57,5% for their white female counterparts in 1994, a trend which is almost directly opposite to that noted in the USA for 1988,[12] where women constituted 52% of minority medical students and 37% of majority students. In the South African context, black men, who have had difficulty gaining access to the professions due to apartheid policies, may see medicine as a highly desirable career choice as it is now more easily attainable, whereas black women may still be uncertain of their rights to embark upon such a career. Now that black students make up a significant proportion of the class, this factor will have contributed to the overall drop in female students from 56,4% of the class in 1993 to 46,9% in 1994.

Other issues

In respect of gender, racial group and home language, the composition of the first-year class of medical students in 1994 is very different from what it was 15 and more years ago. The teachers in the Faculty of Medicine are, however, a reflection of those earlier years, and of the consultant staff of approximately 220 at Groote Schuur Teaching Hospital, 88% are men of whom almost 96% are white. There is at present, therefore, a lack of congruence between this teaching population and the student population in terms of gender and racial group. As more women qualify, perhaps they will pursue academic careers at their *alma mater,* thereby increasing the proportion of women on the teaching staff and providing appropriate alternative role models.[13] In respect of the different racial groups, a different trend may develop. For example, in-house seminars that form part of the Academic Support Programme have revealed that most of the young black preclinical medical students seem set on becoming general practitioners, although this may in part be due to a lack of exposure to the concept of specialisation.

English is the medium of tuition, and all textbooks and lecture notes are written in English. Consequently, the heterogeneity of the class in respect of language has serious implications for those students whose second or even third language is English, and the Academic Support Programme devotes considerable time and effort to the addressing of these difficulties. To ensure comprehension, analogy and metaphor in explanations need modification, as do humour and anecdote. The wording of examination questions must be carefully reviewed as these tend to be culture- and language-bound.

Stress and complex social pressures appear to arise as a result of the disparity between the teachers and the students in terms of their gender or racial group. Stress, accentuated by the student's being away from home, results from living in residences with people from different backgrounds, cultural attitudes and eating habits, learning in a second or third language, and being part of a minority group. It would be preferable to detect the impact of stress on individuals and to try to prevent its occurrence as far as possible. The Student Advice Service at the University of Cape Town Medical School is an organisation of students and staff that has been established to assist students in all aspects of student life, including coping with stress.

Many students, and in particular black students, often face the problem of financial disadvantage. The total cost of keeping a medical student at the University of Cape Town, including tuition and residence fees, was approximately R25 000 per annum in 1994, a small sum when compared with the USA, but considerable relative to South African incomes. Inflation and declining government support for tertiary education forces this amount upwards each year.[2] Fortunately substantial full-cost and near full-cost bursaries have been made available to students on the Academic Support Programme by foreign governments and international business over the last few years, but this source of funding is now becoming insufficient to cope with the larger number of such students being enrolled. Students who are unable to get this form of financial support may therefore incur substantial debts during their medical student career, a factor that puts added stress on them and may influence their academic performance and their career choice upon graduation.[14]

REFERENCES

1. Colborn RP. Medical students' financial dilemma. *S Afr Med J* 1991; **79:** 616-619.
2. Colborn RP. Can medical graduates afford to become state medical officers? *S Afr Med J* 1992; **82:** 264-266.
3. Bickel J. Women in medical education. *N Engl J Med* 1988; **319:** 1579-1584.
4. Eisenberg C. Medicine is no longer a man's profession. *N Engl J Med* 1989; **321:** 1542-1544.
5. Relman AS. The changing demography of the medical profession. *N Engl J Med* 1989; **321:** 1540-1542.
6. Lowry S. What's wrong with medical education in Britain? *BMJ* 1992; **305:** 1277-1280.
7. Anderson MB. Medical education in the United States and Canada revisited. *Academic Medicine* 1993; **68** (6): suppl, S55-S63.
8. Jolly P. Academic achievement and acceptance rates of underrepresented-minority applicants to medical school. *Academic Medicine* 1992; **67:** 765-769.
9. Saxe N, Van Niekerk JP De V. Women doctors wasted. *S Afr Med J* 1979; **55:** 760-762.
10. Jonas HS, Etzel SI, Barzansky B. Educational programmes in US medical schools. *JAMA* 1992; **268:** 1083-1090.
11. Neittaanmaki L, Luhtala R, Virjo I, *et al*. More women enter medicine: young doctors' family origin and career choice. *Medical Education* 1993; **27:** 440-445.
12. Petersdorf RG, Turner KS, Nickens HW, Ready T. Minorities in medicine: past, present and future. *Academic Medicine* 1990; **65:** 663-670.
13. Neumayer L, Konishi G, L'Archeveque D, *et al*. Female surgeons in the 1990s: academic role models. *Arch Surg* 1993; **128:** 669-672.
14. Hernried J, Binder L, Hernried P. Effect of student loan indebtedness and repayment on resident physicians' cash flow. *JAMA* 1990; **263:** 1102-1105.

Accepted 9 Nov 1994.