Selection of Medical Students at McMaster University

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McMaster University admitted its first medical students in 1969. These students entered a programme that has objectives, structure and learning methods that required them to be self-directed in learning and to use a problem solving format as the major educational technique. Some aspects of this programme have previously been described in this Journal (Campbell *et al.*, 1972).

The objectives of the programme emphasise the need to educate physicians who will be effective in contributing to the provision of care and to the solution of the various health problems, and who will be adaptable to changing needs in health. The aims are that the graduates of McMaster's MD programme will have acquired or developed the knowledge, abilities, and attitudes necessary to qualify for further education in any medical career. The general goals have been stated as follows:

- ¹ To identify and define health problems, and search for information to resolve or manage them.
- ² Given a health problem, to examine the underlying physical or behavioural mechanisms. A spectrum of phenomena might be included, from molecular events to those involving the patient's family and community.
- ³ To recognise, maintain, and develop personal characteristics and attitudes required for professional life. These include:
 - (a) Awareness of personal assets, potential, limitations, and emotional reactions.
 - (b) Responsibility and dependability.
 - (c) Ability to relate to, and show concern for, other individuals.
- ⁴ To develop the clinical skills and methods required to define and manage the health problems of patients, including their physical, emotional, and social aspects.
- ⁵ To become a self-directed learner, recognising personal educational needs, selecting appropriate learning resources, and evaluating progress.
- ⁶ To be able to assess, critically, professional activity related to patient care, health care delivery, and medical research.
- ⁷ To be able to function as a productive member of a small group which is engaged in learning, research, or health care.

8 To be aware of, and be able to work in, a variety of health care settings.

The educational format of the programme is based on a tutorial system in which small groups of students work through biomedical problems presented to them (Neufeld and Barrows, 1974; Hamilton, 1976). The programme is intensive, and continuous for three years.

SELECTION OBJECTIVES

Many people involved in medical education have expressed dissatisfaction with the usual methods of selecting medical students. The emphasis on academic performance as reflected by university transcripts is felt to measure only a narrow range of all the qualities desirable in medical students and physicians. The McMaster medical programme planners initiated a selection method utilising criteria that attempted to reflect the objectives and teaching methods of the programme. The selection process is complex. It has previously been described in this Journal (Hamilton, 1972) but since that time has undergone numerous changes.

The academic competence of applicants has always been an important consideration, but competence in other areas has also been viewed as important. The question of which personal qualities are most necessary for the effective practice of medicine is a contentious one. Individuals educated in medicine go into different careers that place different demands on the individuals. Although there are some desirable qualities that few would dispute, it is accepted that some differences in individual personalities are essential. Examples of qualities that might be sought in all successful applicants are honesty, stamina (mental and emotional, as well as physical), adaptability, and sensitivity. A further cluster of qualities more specific to the McMaster system of learning also exist, such as abilities in self-directed learning, self-assessment and problem solving.

The purpose of the selection process is, then, to identify those applicants who can meet the objectives of the MD programme and who can do this most effectively in the educational environment established for the programme.

SPECIAL FEATURES

Heterogeneity

It has been accepted that a class made up of students who have very different eductional, social and experiential backgrounds would be a richer one than a homogeneous class, both in its ability to meet the school's objectives and in the contribution that class members could make to each others' education. To achieve this enriching variety, two selection principles have evolved. First, it has been agreed that no particular academic background is necessarily a preferred one for a medical education. Applications are therefore accepted from students from any university programme and there are no specific course prerequisites. Secondly, the large number of people necessary to assess applicants have been chosen from a very wide variety of backgrounds representing the teaching faculty, the medical students, the physicians of the community, and the community at large, whose members are identified by approaching community organisations. Agencies that do not represent any particular religious, ethnic or political groups, such as the Canadian National Institute for the Blind and the YMCA, are asked to send one or two delegates. Excellent responses have been received and the experience appears to be stimulating and rewarding for the participants.

The Hamilton Academy of Medicine, which has two representatives on the Admissions Committee, is principally responsible for identifying community physicians.

Academic Requirements

To provide an indication of academic competence, applicants must be in at least the third year of any degree programme at a recognised university, and must have achieved at least a B average in their completed undergraduate work. In 1976, for the first time, a small number of places was made available to applicants who did not meet the requirements of having had a university education. These will be referred to subsequently as 'special applicants'.

THE SELECTION PROCESS

Rather than referring to the methods used in general terms, the process will be described as it occurred in 1976. This reflects the experience gained over the preceding seven years.

Submitted Material

All applicants were required to submit their application form, fee, university transcripts and records, three completed reference forms, an autobiographical sketch in which they were instructed to list in chronological order all places of residence since age 14 and a brief description of activities (e.g., occupations, details of school, university and extra-curricular activities) since age 18, and a letter of not more than 800 words. The candidates were instructed to answer in this letter the questions: (1) What have you done? Why? What have you got out of it? (2) Who are you? (3) Where are you going? Why? How are you to get there?

Academic Score

After the completed applications were received, an academic score for each applicant was assigned. This was calculated first, as the overall grade point average of all of the completed undergraduate years of work, and secondly, as the average of the undergraduate years, with the most recent year being given a weighting of three, the next year a weighting of two and each earlier year a weighting of one. This weighted average favoured the student who had shown an improving trend. (Studies of McMaster undergraduates' results over a 5-year period showed that

| Academic score | Applicant pool | | Interview pool | | | Offered pool | | | |
|----------------|----------------|-----|----------------|-----|----------------|--------------|-----|----------------|----------------|
| | No. | % | No. | % | % ¹ | No. | % | % ² | % ³ |
| Unassessable | 7 | 0 | 5 | 1 | 71 | 1 | 1 | 20 | 14 |
| <2.5* | 34 | 2 | 10 | 2. | 29 | 1 | 1 | 10 | 3 |
| 2.5-2.9 | 690 | 36 | 72 | 16 | 10 | 13 | 13 | 18 | 2 |
| 3.0-3.4 | 909 | 48 | 234 | 52 | 26 | 59 | 59 | 25 | 6 |
| 3.5-3.9 | 257 | 14 | 127 | 28 | 49 | 26 | 26 | 20 | 10 |
| Total | 1897 | 100 | 448 | 100 | 24 | 100 | 100 | 22 | 5 |

Table 1. Progress of applicants in the selection process: academic score⁺ (weighted undergraduate grade point average, calculated by giving the most recent year a weight of 3, the next year a weight of 2 and each earlier year a weight of 1).

 $\%^1$ = No. interviewed as a percentage of the number applying

 $\%^2$ = No. offered places as a percentage of the number interviewed

 $\%^3$ = No. offered places as a percentage of the number applying

* These applicants became eligible on the basis of graduate school transcripts.

⁺ Figures may not add to 100 due to rounding.

only a small proportion were either not consistent from year to year or did not improve.) The better of the two averages was used to confirm that the applicant was eligible (academic score >2.5 on the 4 point scale). Graduate work was used, if available, in assessment of eligibility. The better of the two averages of undergraduate work was later used as the candidate's academic score.

Of the 2190 applications received, 1897 were complete and considered to be academically eligible. Of this number, the majority had, of course, applied to other medical schools. However, 580, or 31 per cent of the total had applied only to McMaster. Many of these presumably would not have been eligible to apply to other medical schools because of their more stringent academic prerequisites. The distribution of academic scores of applicants, of those selected for interview, and those offered places, is shown in Table 1.

Information

All of the eligible applicants were sent a letter containing a detailed description of the selection process, and a letter from current medical students in which they stressed the need to understand what the McMaster programme involves, and highlighted some of the differences in the learning methods compared to those of more conventional programmes.

Letter Score

Each applicant was assigned a personal qualities score based on the autobiographical letter. This score was determined by three independent readers. Fifty

| Letter score A | Applica | nt pool | In | Interview pool | | | Offered pool | | | |
|----------------|---------|---------|-----|----------------|----------------|-----|--------------|----------------|----------------|--|
| | No. | % | No. | % | % ¹ | No. | % | % ² | % ³ | |
| 3 | 54 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | |
| 4 | 138 | 7 | 5 | 1 | 4 | 1 | 1 | 20 | 1 | |
| 5 | 205 | 11 | 14 | 3 | 7 | 1 | 1 | 7 | 1 | |
| 6 | 333 | 18 | 35 | 8 | 11 | 4 | 4 | 11 | 1 | |
| 7 | 340 | 18 | 44 | 10 | 13 | 6 | 6 | 14 | 2 | |
| 8 | 325 | 17 | 76 | 17 | 24 | 9 | 9 | 12 | 3 | |
| 9 | 249 | 13 | 96 | 22 | 40 | 19 | 19 | 20 | 8 | |
| 10 | 158 | 8 | 102 | 23 | 67 | 31 | 31 | 31 | 20 | |
| 11 | 73 | 4 | 56 | 12 | 80 | 22 | 22 | 40 | 31 | |
| 12 | 22 | 1 | 19 | 4 | 90 | 7 | 7 | 37 | 33 | |
| Total | 1897 | 100 | 448 | 100 | 24 | 100 | 100 | 22 | 5 | |

Table 2. Progress of applicants in the selection process: letter score (cumulative score from three assessors' independent assignment of a score of a 1-4 scale)

 $\%^1$ = Number interviewed as a percentage of the number applying.

 $\%^2$ = Number offered places as a percentage of the number interviewed.

 $\%^3$ = Number offered places as a percentage of the number applying.

teams, each consisting of a representative of the faculty, of the medical students and of the community were each given the autobiographical letters and sketches of forty applicants. Each member of the team was assigned a score on a 1-4 scale for the letter, and the personal qualities score was taken as the sum of the three independent scores. The readers assessed the applicants from what they said about themselves in their letters in the light of their age, experiences and opportunities, as shown in the sketch. The letter assessment form identified 14 qualities to be assessed as either present or absent by the reader. These items were then used as the basis for a final score, although no formal weighting structure was imposed upon the reader in making this judgement. Readers were encouraged to provide additional comments to support the final mark in a space provided on the assessment form. The distribution of letter scores of applicants, of those selected for interview, and of those offered places is shown in Table 2.

In earlier years, this part of the selection process created considerable concern. It was thought that it was too easy to be coached in what to write, or to over-represent one's accomplishments. Some simple checks have reassured many of the critics. In recent years each team received a group of 'control' letters. These were letters of genuine applicants that had been pre-assessed. In one typical year, the scores of three control letters (mean of all teams \pm S.D.) were 5.65 \pm 1.26, 7.45 \pm 1.18, 9.90 \pm 1.18. The criterion scores for these letters were 5, 7 and 10 respectively. In order to be able to check the truthfulness of what was said in the letter, the applicant was asked to append the names and addresses of people who could corroborate the applicant's involvement in the activities described. We selected 60 letters at random and wrote to all of the named referees. A very high degree of corroboration was found and many referees said that the applicant had under-represented his role.

Selection for Interviews

The academic score and personal qualities score were combined for each applicant, using a formula that gave approximately equal weight to each. Those 375 applicants with the highest composite scores were invited for interview. Twenty-five applicants who had very high academic scores and twenty-three who had very high personal qualities (letter) scores but whose composite scores were not high enough to have been selected were added to those to be interviewed.

In previous years, the method of selection for interview had been based on two streams, high academic scores or high personal qualities (letter) scores. The move to a composite score made more explicit the belief that a range of favourable qualities, both academic and personal, is needed in all applicants. In examination of the class admitted in 1975 it was shown that the change in method of selection for interview would have made only a small difference to the class composition.

An additional group of 25 applicants was invited for interview on the basis of outstanding references. We have not found that references can be used to assess most applicants. However, some do contain descriptive comments which allow those applicants to be distinguished from the majority. This use of references as an additional screening method acknowledges that excellent candidates may otherwise have been overlooked.

Geographic Weighting

At the stage of selection for interview, a weighting based on published geographical preferences was applied. Residents of Hamilton Health Region and Northwestern Ontario were the most favoured, and decreasing priority was given to other regions, with non-Canadian applicants last. Residency is defined as having lived in a region for three years since the age of 14, or being in at least the third year of studies in a university in that region. Landed immigrants are given the geographical status of Canadian unless they qualify for a preferred region. Increasing composite score levels were required for applicants as their regional priority decreased. The results of this weighting in selection for interview can be seen in Table 3. The Hamilton Health Region consists of an area of approximately 8,000 sq. miles with a population of 1.5 million. In it there are five universities, of which only McMaster has a medical school. N.W. Ontario consists of an area of approximately 225,000 sq. miles with a population of 225 thousand. In it there is one university and no medical school.

| Geographical region | Appli | cant pool | Inte | erview | lood | | Offere | d pool | |
|----------------------------|-------|-----------|------|--------|----------------|-----|--------|----------------|----------------|
| | No. | % | No. | % | % ¹ | No. | % | % ² | % ³ |
| Hamilton Health Region | 43 | 8 23 | 237 | 53 | 54 | 49 | 49 | 21 | 11 |
| N.W. Ontario | 3 | 3 2 | 19 | 4 | 58 | 2 | 2 | 10 | 6 |
| Ontario (other than H.H.R. | | | | | | | | | |
| and N.W. Ontario) | 824 | 4 43 | 168 | 37 | 20 | 40 | 40 | 24 | 5 |
| Canada | 42 | 0 22 | 21 | 5 | 5 | 8 | 8 | 38 | 2 |
| Other | 18 | 2 10 | 3 | 1 | 2 | 1 | 1 | 33 | 1 |
| Total | 189 | 7 100 | 448 | 100 | 24 | 100 | 100 | 22 | 5 |

Table 3. Progress of applicants in the selection process: geographical status

^{%1} = Number interviewed as a percentage of the number applying.

 $\%^2$ = Number offered places as a percentage of the number interviewed.

 $\%^3$ = Number offered places as a percentage of the number applying.

Interviews

The interviews were held on four days, at two successive weekends. All applicants selected for interview were required to come to Hamilton on one of those days so that the interview method and setting could be made consistent. In an effort to help applicants feel as much at ease as possible, medical student volunteers chatted with them as they waited for interview. These volunteers were also available to answer questions about the medical programme.

(a) Individual Interview. The first stage of interviewing involved the assessment of the applicant by a 4-person team. These teams generally consisted of a faculty member, a medical student, a lay member of the community, and a community physician. Each team met during the week preceding the interviewing weekends and was trained by being observed while interviewing two simulated applicants (medical student volunteers) and having their performance assessed. The interview method required that three members of the team interviewed the applicant while the fourth member observed through a one-way window. Each member took a turn as observer.

The teams were asked to assess the following characteristics: problem solving, self-appraisal ability, ability to relate, motivation, suitability for a medical career, and suitability for the McMaster programme. The only information available to the team about the applicant was the autobiographical sketch, which was distributed just before the interview. At the end of the 45 minute interview, all four members of the team scored the assessment forms independently. They then discussed their ratings and could, as a result of this discussion, change their scores, although there was no obligation to achieve a consensus. The team member who had acted as observer was, through not having to ask questions and being outside the interview process, often able to clarify and expand on the interpretation of the other interviewers.

If the members of the team felt that the interview did not yield sufficient information for them to assign a score, they were permitted to request that the applicant be re-interviewed. In discussion, it usually became apparent that the team members were responding to a difference of opinion among themselves and not to a real need for a second interview. On the few occasions when a re-interview was granted, the second team was told it was a second interview, but was not told the reasons for its occurence.

(b) Simulated Tutorial. The second part of the interview process, a group exercise called a simulated tutorial, has been introduced to assess two qualities that are particularly important in the McMaster MD programme: the ability to function well and learn effectively in a group, and the ability to learn by the method called problem-solving (Mitchell *et al.*, 1975).

To take part in this exercise the applicants were randomly assigned to 5 member groups. In these groups they were met by a medical student who spent some time with them, to help them learn a little about each other. The group then entered an observation room and was given two prepared written problem situations by the medical student. The group members were allowed to select the problem they preferred, and were then instructed to start discussing it. The problems were constructed around situations in which many complex issues were involved. The analysis and handling of the situations did not depend on any particular academic knowledge, but were designed to test the general ability of the applicants to unravel the mesh of interrelated issues and to identify manageable topics that would have to be pursued for an adequate resolution to be achieved. After 15 minutes of discussion, the medical student, who had not taken part after the start, asked each participant to assess how the group had progressed. They were then asked whether they wanted to pursue the same problem or discuss the second one. The latter choice was the usual one. After a further 15 minutes the medical student again asked the group members to evaluate the group's progress and their own participation.

The assessors, a medical student, a faculty member, and a member of the community, seated behind the one-way glass, then assigned a score to each of the five group members in the categories of group skills and problem solving ability. The assessors worked as teams and had previously been trained by observation of a very effective tutorial group of medical students and a videotape of a much less effective group of applicants of a former year. The simulated tutorial planners pointed out aspects of the two different groups' performances which were relevant to the characteristics being assessed.

(c) The Reliability and Validity of the Interviews. The reliability and validity of interviewing as a selection method have been difficult to demonstrate, although there is some suggestion that structured interviews by a group may be valid

(Taylor, 1969). We have virtually no data to contribute to this question other than the evidence that the interview process is not random. We hope to give studies on assessment of the personal interview high priority in the future.

The question of whether the assessment of a letter and the use of academic grades are valid methods of selection for interview was looked at last year when 25 applicants were selected at random from those not otherwise identified. This group of applicants' interview scores were significantly lower than those of the $group = 15.0 \pm 6.0$ combined: random (n = 25),all other applicants others = 18.0 ± 6.31 (n = 404). This result might have been expected, for over the years we have been able to show modest, yet consistent, positive correlations between the personal qualities assessment based on the letter and as judged at interview. Typical correlation coefficients have been, letter score:personal interview score, 0.22; letter score:simulated tutorial score, 0.25; personal interview score: simulated tutorial score, 0.26. On the other hand, academic score has not correlated with letter score or interview performance but is perceived as an important quality in its own right. These consistent correlations can be

| Score | Intervie | w pool | Offered pool | | | | |
|-------|----------|--------|--------------|-----|----------------|--|--|
| | No. | % | No. | % | % ¹ | | |
| 4-8 | 30 | 7 | 0 | 0 | 0 | | |
| 9-12 | 39 | 9 | 0 | 0 | 0 | | |
| 13-16 | 65 | 14 | 0 | 0 | 0 | | |
| 17-20 | 106 | 24 | 3 | 3 | 3 | | |
| 21-24 | 107 | 24 | 29 | 29 | 27 | | |
| 25-28 | 101 | 22 | 68 | 68 | 67 | | |
| Total | 448 | 100 | 100 | 100 | 22 | | |

Table 4. Progress of applicants in the selection process: interview scores

B. Simulated tutorial score (Total of scores of three assessors, each using a 1-7 scale)

| Score | Intervi | ew pool | Offered pool | | | | |
|-------|---------|---------|--------------|-----|----------------|--|--|
| beene | No. | % | No. | % | % ¹ | | |
| 3-6 | 28 | 6 | 0 | 0 | 0 | | |
| 7-9 | 78 | 17 | 7 | 7 | 9 | | |
| 10-12 | 108 | 24 | 20 | 20 | 18 | | |
| 13-15 | 118 | 26 | 31 | 31 | 26 | | |
| 16-18 | 95 | 21 | 34 | 34 | 36 | | |
| 19-21 | 21 | 5 | 8 | 8 | 38 | | |
| Total | 448 | 100 | 100 | 100 | 22 | | |

%¹ = No. offered places as percentage of number interviewed.

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achieved only if both the letter and the interview have been measuring real qualities as opposed to generating random numbers, and we believe that these scores reflect characteristics that might reasonably be labelled 'personal qualities'.

The study we did last year with a group randomly selected for interview showed that the random group also obtained significantly lower scores in the simulated tutorial than did all other groups combined: random group = 10.3 ± 4.3 (n = 25), all others = 12.3 ± 4.4 (n = 404). For several years, correlation of simulated tutorial scores with level of performance in the MD programme has been sought, and small positive correlations have been found. For the class admitted in 1975 the correlation between simulated tutorial scores and the assessment made by tutors after 20 weeks of the programme was 0.215 (p < 0.02, n = 100) for problem solving ability, but was not significant for group skills. However, when the tutors were themselves grouped *a priori* by the Unit Planner as to their own problem solving ability and group skills, and correlations sought between the simulated tutorial scores and the assessments of the 'highly skilled' tutors, the correlation for problem solving ability was 0.317 (p < 0.004, n = 70) and for group skills was 0.312 (p < 0.03, n = 35).

(d) Interview Scores. The scores for each applicant in the two parts of the interview were combined, the individual interview being given heavier weight. The individual scores are shown in Table 4. This combined score was used to reduce the numbers of applicants from 450 to 225.

Collation

The complete file of each of the 225 applicants was then reviewed in a process we have called collation. The collation group was made up of 12 members of the Admissions Committee, i.e. those responsible for each part of the process previously described, together with three medical students and one member of the community. Each file was independently reviewed by two members of this group. Each arrived at a recommendation and then met to discuss their decisions. They then presented their recommendations to the entire collation group. When the original reviewers had been in disagreement or both had been undecided, the decision was made by the entire group after presentation of the relevant data by the reviewers. The file review involved a search for evidence to fortify or negate any reservations expressed by assessors at any stage in the process. Applicants were identified only by file numbers during the group presentations.

Thus, until the stage of collation, the various selection methods were applied independently and sequentially. At the stage of final review and class selection a cumulative assessment was made using all the information in the file.

'Special Applicants'

In 1976, it became possible for people without a typical university education to be admitted to the programme. By this means it is hoped that the selection base may be expanded. To do this effectively in the Canadian educational system it appeared necessary to go beyond the university community. The hope is that this will make the profession more accessible, both in feeling and in fact, to a broader section of the population.

The criteria for acceptability for such people were that they were residents of the Hamilton Health Region or Northwestern Ontario, that they were at least 24 years old, that they had demonstrated an ability to function in an academic setting by achieving suitably high grades in the equivalent of four university extension courses in one calendar year, and that they made an exceptional contribution to society.

Since this special category was announced only in the late summer of 1975, few special applicants were able to fulfil the academic eligibility criterion. Sixteen applications were, however, received. A sub-group of the admissions committee reviewed these applications with a view to assessment of their contribution to society, and this group recommended that 3 out of the 16 be interviewed. From the stage of interview onwards the same criteria were applied to this group of applicants as to all others. Of the three, one was offered a place in the class which entered in September 1976.

RESULTS

While results are difficult to assess, some information is available.

The Process

Representatives from the four groups of assessors, i.e. medical students, community at large, community physicians, and full time faculty, continue to volunteer for the various time-consuming activities. They view their roles as important. Indirect benefits have been the friendships and insights gained, especially by interviewing team members.

The decentralisation of decision making, which places responsibility for assessment upon randomly assigned teams, in both letter reading and interviewing, has provided immunity from political pressure.

The time spent on the process is considerable. In 1976 the final 100 places were filled after 7000 hours of work by faculty, medical students and community members. This figure does not include administrative work done by the office staff, or the many information meetings held with applicants.

Class composition

The prerequisites for eligibility and the selection methods have yielded classes whose composition is somewhat different from the usual medical class.

About a third of each class has been made up of students who lack any extensive exposure to biological sciences at a university level, and there is a higher proportion of B grade students than A grade students. The academic standing of

| Age | Applicant pool | | Inte | rview poo | al | Offered pool | | | | |
|--------------------|----------------|----------------|------|-----------|----------------|--------------|-----|----------------|----|--|
| | No. | % | No. | % | % ¹ | No. | % | % ² | %3 | |
| Under 20 | 8 | 0 | 2 | 0 | 24 | 0 | 0 | 0 | 0 | |
| 20-24 | 1148 | 61 | 262 | 59 | 23 | 56 | 56 | 21 | 5 | |
| 25-29 | 512 | 27 | 111 | 25 | 22 | 24 | 24 | 22 | 5 | |
| 30-35 | 183 | 10 | 64 | 14 | 35 | 20 | 20 | 31 | 11 | |
| over 35 | 46 | 2 | 9 | 2 | 20 | 0 | 0 | 0 | 0 | |
| Total | 1897 | 100 | 448 | 100 | 24 | 100 | 100 | 22 | 5 | |
| . Sex | | | | | | | | | | |
| Sex Applicant pool | nt pool | Interview pool | | | Offered pool | | | | | |
| 4.00 | No. | % | No. | % | % ¹ | No. | % | % ² | % | |
| Male | 1296 | 68 | 279 | 62 | 22 | 57 | 57 | 20 | 4 | |
| Female | 601 | 32 | 169 | 38 | 28 | 43 | 43 | 25 | 7 | |
| | 1897 | 100 | 448 | 100 | 24 | 100 | 100 | 22 | 5 | |

Table 5. Progress of applicants in the selection process: age and sex

A Age (at time of application)

applicants, of those selected for interview and of those offered places is shown in Table 1.

Women applicants have been more successful in the selection process than have men (Table 5). Over the last five years 41 per cent of the places were taken by women, although they constituted 26 per cent of the total applications. This result has not been due to any weighting in the process, but may be due to the somewhat higher qualifications of the women, which may result from different determinants of career choice. The 1976 applicant pool of women had a significantly higher (p < 0.005) grade point average than the applicant pool of men. The women applicants' average scores for their letter, their personal interview and simulated tutorial were also all significantly higher than the men's scores (p < 0.005, p < 0.01 and p < 0.05 respectively). In the past five years the number of eligible applications from men has risen from 1105 to 1296 (17 per cent increase) whereas the number of eligible applications from women has risen from 226 to 601 (166 per cent increase). This large increase in the applications from women may in part be a reflection of an increase in the numbers of women entering universities in Canada. Over the preceding decade the number of women at McMaster University increased from 30 per cent to 43 per cent of the total undergraduate enrolment. Notably, the number of women in science programmes

has increased from 11 per cent to 36 per cent in this time. (Women admitted to Canadian medical schools in 1975 occupied 33 per cent of the places.)

Geographical weighting at the stage of selection for interview has consistently resulted in 50 to 60 per cent of the interview places being taken by students from the Hamilton Health Region and Northwestern Ontario. A high percentage of these groups is among those applicants who received offers of places (Table 3). Twenty-seven applicants from Northwestern Ontario have been accepted in eight years. Few non-Canadian applicants have gained admission. This reflects the overall numbers of non-Canadians admitted to Canadian medical schools. Whereas non-Canadians made up 9 per cent of the students in Canadian medical schools in 1965, the number had fallen to 1 per cent in 1975.

The average age of the students admitted in 1976 was 24.9 years, somewhat higher than the average of 21.4 for all Canadian schools of medicine (Table 5).

Performance in the Programme

Performance studies are difficult to conduct because no grades are assigned in the programme. Students are assessed as satisfactory or unsatisfactory, and the frequency of the latter assessment is low.

The students who have encountered academic difficulty during the programme have not been from any particular group. We thus assume that undergraduate grades and course backgrounds have little influence upon performance in the programme as presently measured. Similarly, the students failing the Medical Council of Canada examination are from various backgrounds and academic records. The percentage of students who have failed one or both parts of this examination since 1972 on their first attempt has been 9 per cent (ranging from a low of 0 per cent to a high of 12 per cent). Unlike some other schools, McMaster does not withhold permission from some students to take this examination.

In seven years five students have dropped out. Two of them are presently in another medical school and three in other careers. One student has been dismissed on academic grounds. This might appear to be an indicator of a successful admissions process, but it may be misleading because a very large investment of faculty time is made to help students achieve a satisfactory standing; some students require remedial help (for the classes of 1976 and 1977, 8 per cent have received such help), and some take leave of absence. Whether these people could complete the programme if the system put less emphasis on remedial action is difficult to say.

Performance following Graduation

For the five classes that have graduated, the choice of residency programmes is similar to the profile of other Canadian schools, with approximately half choosing primary care and half choosing various specialty fields. The initial group of students selected from Northwestern Ontario have all chosen primary care training and three of the five entered practice in Northern Ontario in 1976.

Studies are under way to evaluate the long-term performance of McMaster graduates and the relationship with admissions and in-course data.

This article is an expansion of an essay commissioned by the International Council for Educational Development as part of a Conference on Access to Medical Education, which took place in Schliersee, Germany, in May 1977. The proceedings of the conference will be published.

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THAT MAN AGAIN

Ah! my old friend Dr Harvey—I knew him right well. He made me sitt by him 2 or 3 hours together in his meditating apartment discoursing. Why, had he been stiffe, starcht, and retired, as other formall Doctors are, he had knowne no more than they. From the meanest person, in some way, or other, the learnedst man may learn something. Pride has been one of the greatest stoppers of the Advancement of Learning.

He was far from Bigotry. He was wont to say that man was but a great, mischievous Baboon ... He would say that we Europeans knew not how to order or governe our Woemen, and that the Turks were the only people used them wisely.

I remember he kept a pretty young wench to wayte on him, which I guesse he made use of for warmeth-sake as King David did, and tooke care of her in his Will, as also of his man servant . . . He was not tall, but of the lowest stature, round faced, olivaster complexion; little Eie, round, very black, full of spirit; his haire was black as a Raven, but quite white 20 years before he dyed.

(From John Aubrey's Brief Lives.)