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Medical school applications—a critical situation

The supply of medical students may not meet the demands of medical school expansion in the United Kingdom

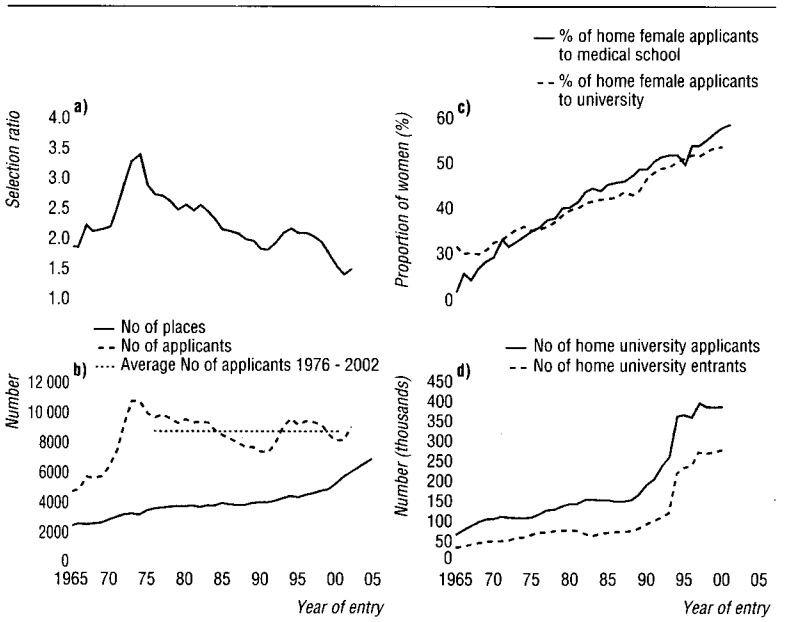
Medical schools need well qualified, well motivated medical students. Admissions tutors, their desks piled high with applications, usually worry little about a dearth of applicants. Nevertheless, because each applicant applies to four schools, the surfeit is largely illusory. The statistics of the Universities and Colleges Admissions Service (www.ucas.ac.uk) show that, whereas 9192 "home" (United Kingdom) entrants applied to medical school in October 1995, five years later this number had dropped by 12%, to 8108. Medical schools expanded, and in 2000 the number of home entrants was 5229 compared with 4361 in 1995, a rise of 20%. The most important statistic underlying selection is the selection ratio[1]—the number of applicants for each place at medical school—and it fell from 2.11 in 1995 to 1.55 in 2000.

The falling selection ratio inevitably concerned the Department of Health. Medical education in the United Kingdom is currently expanding. Five new medical schools will have opened by 2005, and 6873 home entrants will start medical school in the United Kingdom,[2] a 31% increase over 2000 and a 58% increase over 1995. The worry was obvious. If in 2005 the number of applicants was the same as in 2000, then the selection ratio would be a mere 1.18, supply barely meeting demand.

The Department of Health commissioned Professor Janet Grant and her colleagues to analyse the available statistical data. Their lengthy, meticulous, closely argued report shows the complexity of selection and, although there are occasional exceptions,[3] how little is known of why applicants apply for medicine or other university subjects.[2 3] As if to emphasise the point, a late appendix describes how applicant numbers for 2002 unexpectedly rose by 13% over 2001.

Is medicine declining in popularity as a career? The selection ratio has been falling since the mid-1970s (figure 1a), from a golden age in 1973 and 1974 with 3.4 applicants per place—an artificially high ratio because entrants were being newly accepted without A level biology.[4] Selection ratios depend on the numbers of applicants and acceptances. From 1976 to 2002 numbers of home applicants fluctuated surprisingly little, varying between 7300 and 9800; the average of 8780 was only slightly lower than in 2002 (figure 1b). The long term decline in the selection ratio results not from a change in the behaviour of applicants but from a gradual and then faster rise in the number of acceptances, which between 1976 and 2002 increased by 70% from 3532 to 5972 (figure 1b).

The apparent fixity in the number of applicants to medical school may seem surprising given that ever higher proportions of school leavers in the United Kingdom enter university (figure 1d): over 40% of 17 year olds now apply to university. Although that large pool of university applicants may seem the place to find more applicants to medical school, few have the right qualifications. The long term trends also dispose of another myth, that medicine is specifically suffering



(a) Selection ratio for medical school applicants, 1965-2002; (b) numbers of places at medical school for home students, numbers of home applicants, and average numbers of applicants for 1976-2002; (c) proportions of home entrants to medical school and all home entrants to university who are female; (d) numbers of home university applicants and entrants. (In 1994 many former polytechnics became universities and students were admitted through the Universities and Colleges Admissions Service.)

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from a lack of male applicants. More women have been entering medical school for 40 years (figure 1c), but the rise parallels that for universities in general.

The Grant report carefully considers A level qualifications and finds further support for a phenomenon first described in the Dainton report of 1968—namely, that a seemingly fixed 5% of an age cohort gains good science qualifications.[5,6] The origins of that constancy are obscure and urgently need understanding. In 2000 only 19 486 people gained an A or B grade in chemistry, the key A level qualification required by most medical schools, and that small group was the effective pool of potential applicants to medical school.

The problem for medical schools could be alleviated by accepting students with lower A level grades. Do medical students need to be so very highly qualified? Despite occasional casual claims that A levels do not predict performance at medical school, evidence shows the opposite. In a meta-analysis, school attainment in general predicts performance at medical school, and, more specifically, A levels predict performance in basic medical science examinations, finals, and longer term in postgraduate membership and fellowship exams.[7–11] Lowering entry requirements therefore runs the short term risk of increased numbers of students dropping out of medical school, or the longer term risk of less well qualified medical entrants becoming less competent doctors. Medical students and doctors can be neither too intelligent nor too well qualified.

Medicine undoubtedly has a problem—soon, the applicants for an expanding number of medical school places may be too few, without any obvious untapped pool of qualified applicants. Dainton recognised the problem in the 1960s: "With the continuation of the present trends universities will find themselves increasingly recruiting rather than selecting candidates in science and technology."[5] Ultimately the problem is that the massive university expansion in the United Kingdom has not been accompanied by more science students in schools, and the increasingly urgent solution for that will have to come from the Department for Education and Skills.[12]

I C McManus *professor of psychology and medical education*

Department of Psychology, University College London, London WC1E 6BT (i.mcmanus@ucl.ac.uk)

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Volume of procedures and outcome of treatment

The NHS needs to harness the relation more effectively

Since the comparison of Billroth's and Halsted's recurrence rates after mastectomy, we have known that a relation exists between the volume of procedures and the outcome of treatment. This relation still holds major promise for improved safety of patients. The NHS needs a more systematic approach to identify volume thresholds and to ensure that they are met. This will provide a firmer foundation for evidence based assessment of service mergers, capital developments, and for informed choice by patients.

In 1996, the NHS Centre for Reviews and Dissemination published a systematic review to determine for which procedures such a relation existed.[1] The list included coronary artery bypass surgery, paediatric heart surgery, acute myocardial infarction, coronary angioplasty, aortic aneurysm, amputation of the lower limb, gastric surgery, cholecystectomy, intestinal operations, knee replacement, and neonatal intensive care. This review was not a meta-analysis—the studies included different groups of patients, outcome measures, and methods of categorising volumes. Moreover for some procedures the better the adjustment for case mix the weaker was the relation between volume and outcome. Consequently debate about the relationship has continued.

The NHS performance indicators include league tables of death rates and other outcomes, but they do not consider any relation of volume to outcome. Although the relation has found expression in health policy in the United Kingdom—for example, in the NHS guidance on breast cancer, the guidance on colorectal cancer states that evidence of a volume effect is not found in most studies.[2] This contrasts with a review by the US National Academy of Sciences, which found that colonic resection for cancer was associated with lower death rates in hospitals that did more procedures.[3]

Recent research has shed more light on this issue. In the United States, four new reports have been published: a systematic review in 2000,[4] which received

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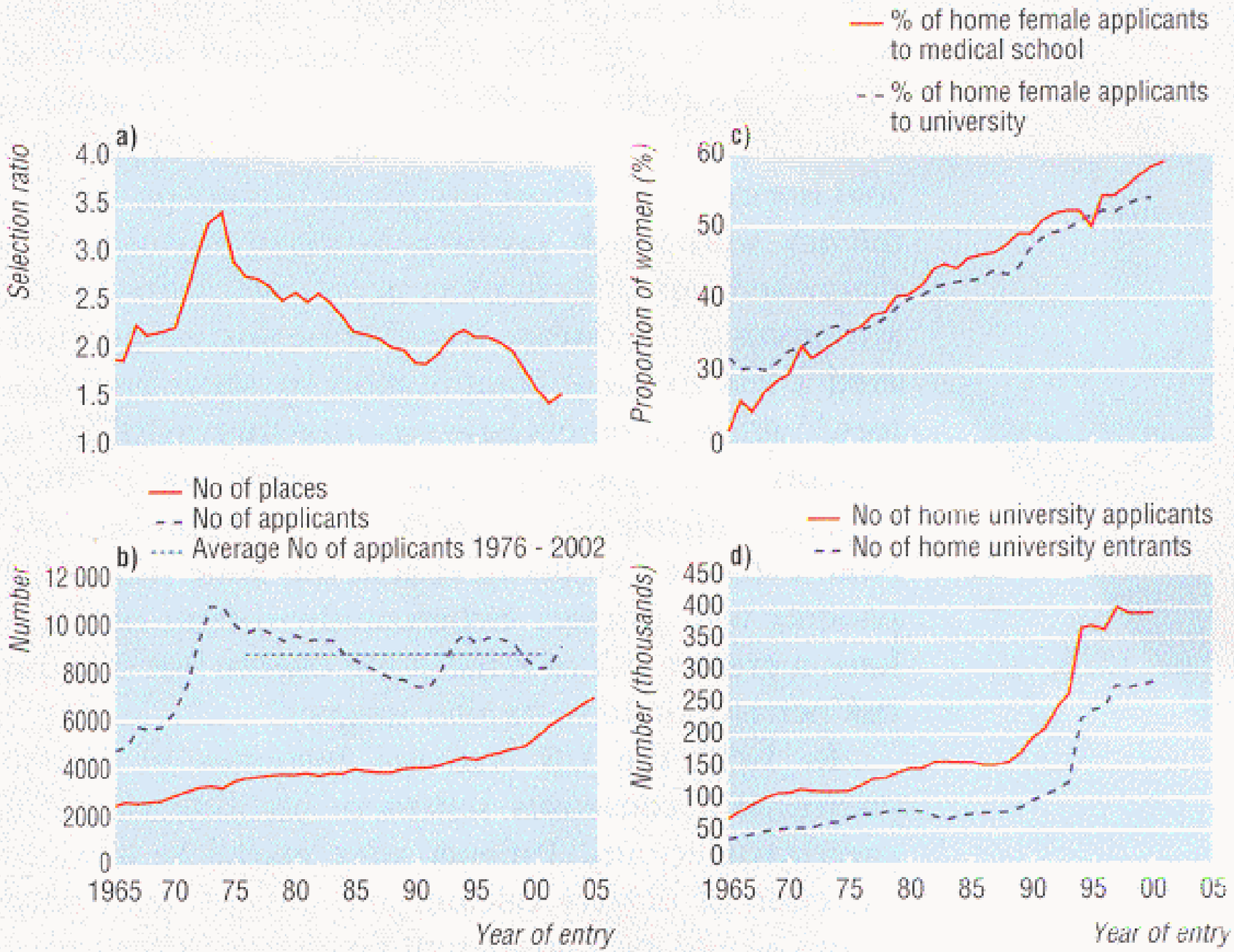

(a) Selection ratio for medical school applicants, 1965-2002; (b) numbers of places at medical school for home students, numbers of home applicants, and average numbers of applicants for 1976-2002; (c) proportions of home entrants to medical school and all home entrants to university who are female; (d) numbers of home university applicants and entrants. (In 1994 many former polytechnics became universities and students were admitted through the Universities and Colleges Admissions Service.)