

Medical students' beliefs about nine different specialties

A F FURNHAM

Abstract

A total of 449 preclinical and postclinical students from three London University medical schools completed one of nine versions of a 50 item questionnaire seeking their attitudes to nine specialties: anaesthetics, general practice, gynaecology, hospital medicine, paediatrics, pathology, psychiatry, radiology, and surgery. There were three main findings. Firstly, though item by item analysis yielded interesting and predictable differences, such as the negative attitudes to psychiatry, the students' attitudes and beliefs were multidimensional: whereas any specialty might be seen as highly positive on one dimension—for example, effectiveness—it might be seen as highly negative on another—for example, relationships with patients. Secondly, the nine specialties seemed to be discriminative on two dimensions—soft versus hard; general versus specific—such that psychiatry was seen as soft and specific, general practice soft and general, and surgery hard but neither general nor specific. Thirdly, these attitudes tended to differ between preclinical and clinical students, but only modestly, in that some extreme (positive and negative) attitudes were modified by experience.

Introduction

Much has been published on medical students' beliefs about, knowledge of, and choices concerning the various specialties in medicine in Australia,¹ Canada,² England,³ Northern Ireland,^{4, 5} and the United States.⁶⁻¹⁰ This research no doubt arises from the fact that despite being fairly homogeneous in background, ability, interests, and formal powerful socialisation in medical schools students end up in highly dissimilar vocations (compare, for instance, a pathologist and a general practitioner; a psychiatrist and a surgeon). "There is no other field where the congruence of a long-term educational experience is so great but where differences in the actual work performed are so striking."⁷

Despite considerable research in America and Britain, there is no agreement on why medical students prefer or choose one specialty over another. All sorts of variables have been considered in relation to choice of career or beliefs about the various specialties, including personality; demographic factors such as age, education, etc; sex and marital state; as well as beliefs about various features of the specialty (patients, prognosis, progress).

The steady decline in the number of medical students choosing to specialise in psychiatry has resulted in some interesting studies on their attitudes to psychiatry,¹¹⁻¹³ yet the various other specialties have been ignored. Questionnaires have been developed specifically to measure attitudes to various medical specialties. Some of these are restricted to, and designed specifically for, one specialty—for example, psychiatry—while others are more general. The most recent scales appear to have gone through a thorough psychometric assessment to ensure that they are valid and reliable. A main problem in this aspect of research is that there is no valid scale capable of measuring a range of attitudes and beliefs to numerous medical specialties. Questionnaires either measure one particular attitude (for example, prestige, preference) to various specialties or measure various attitudinal dimensions (status of specialty, efficacy, type of patients) to one specialty, but not both.

This study set out to determine beliefs about and attitudes towards nine different specialties by medical students at various London medical colleges. Other studies that have examined attitudes to medical specialties were usually restricted to a limited number of specialties—for example, four (general practice; internal medicine, including paediatrics; surgery, including obstetrics; and psychiatry)^{14, 15}; five (general practice, internal medicine, paediatrics, psychiatry, and surgery)⁷; six (internal medicine, surgery, psychiatry, paediatrics, gynaecology, and general practice).⁹ The nine considered here were chosen partly on the basis of previous studies,⁹ partly on the basis of attempts to classify the medical specialties,¹⁶ and partly on the basis of statistics examining the career choice of doctors qualifying in Britain.^{17, 18} The various aspects of the students' attitudes and beliefs examined included the overall merits of the specialty, its efficacy, its role definition and function, possible abuses and social criticisms, and career and personal rewards, academic merit, and progress of the specialty.

Subjects and methods

In all, 476 students (253 men, 223 women) from three London University medical schools took part in the study. A total of 198 were preclinical (nearly all in their second year), while 278 were clinical students, mainly in their fifth year. All were tested in 1983-5 and had volunteered to participate during class time. Eight classes of preclinical and clinical students were approached, given a brief description of the study, and asked to complete the questionnaire. The response rate was 92% of completed and usable questionnaires returned.

Questionnaire—Nine versions of the same questionnaire were devised. The questionnaires were identical except that each was headed with a particular medical specialty. The questionnaire asked 50 questions covering numerous aspects of the specialty, from "curing" patients to how the specialty was taught in medical schools. The nine specialties were anaesthetics, general practice, gynaecology, hospital medicine, paediatrics, pathology, psychiatry, radiology, and surgery. Others such as community medicine were omitted simply because of the sheer numbers available.

Results

The results were subjected to several statistical analyses in order to determine differences in the perceptions of the different medical specialties. Results given in the table are simply the mean scores. The distribution of most of the responses was fairly normal. Some preliminary analysis was done comparing the students from the three medical schools in two specialties and fewer differences than expected by chance occurred. Similarly, there were few sex differences.

The table shows the mean scores on a five point scale: (1) strongly agree; (2) moderately agree; (3) uncertain; (4) moderately disagree; (5) strongly disagree. Items in italics were the extreme scores, which differed significantly in every instance (usually at $p < 0.001$).

Psychiatry—Interestingly, 28 of the 50 items showed psychiatry at the one extreme. Thus compared with the eight other specialties medical students believed that psychiatry had advanced least in recent years; psychiatrists were less stable than other doctors; psychiatry was the least expanding frontier of medicine; psychiatric patients' problems were particularly interesting and challenging; psychiatry had lowest status in medicine; psychiatry was most unscientific and imprecise; psychiatry was more of a waste of a medical education; psychiatrists were fuzzy thinkers; psychiatry was unrewarding; psychiatrists were more concerned to establish rapport with their patients; and psychiatrists talked a lot but did little. Furthermore, the students thought that psychiatric treatment caused patients to worry too much; psychiatric facts were mere speculations; psychiatric patients were the most interesting; psychiatric treatment was basically fraudulent; few results were replicable; psychiatric theories were far removed from practice; research in psychiatry showed less patient improvement; psychiatrists tended to overconceptualise their patients' problems; psychiatry was more of an art than a science; psychiatric patients got better less often; there were too many doubts about psychiatry; psychiatrists were less dogmatic than other doctors; psychiatrists were held in poor regard by other

Mean scores on five point scale for 50 items and nine specialties. (1 = strongly agree; 2 = moderately agree; 3 = uncertain; 4 = moderately disagree; 5 = strongly disagree)

Statement	Radiology (n=49)	Psychiatry (n=53)	Anaesthetics (n=62)	Pathology (n=53)	Gynaecology (n=56)	Paediatrics (n=55)	Hospital medicine (n=57)	Surgery (n=35)	General practice (n=56)
(1) Specialty has advanced considerably in recent years in its understanding of illness and disease	1.8	2.9	2.4	1.9	2.3	2.3	2.6	2.6	2.5
(2) On average, practitioners in specialty make less money than other doctors	3.0	3.5	3.8	2.8	4.1	3.0	3.0	4.1	3.9
(3) Specialty as it is taught in medical school is often boring and irrelevant	3.4	3.3	3.0	3.0	3.6	3.6	3.1	3.2	3.7
(4) Practitioners in specialty are as emotionally stable as other doctors	1.8	3.2	1.9	2.0	2.0	1.6	2.7	2.7	1.7
(5) Specialty is rapidly expanding frontier of medicine	1.9	3.2	2.7	2.8	3.2	2.5	3.0	2.8	2.5
(6) Problems presented by patients are particularly interesting and challenging	3.0	2.1	2.9	2.8	2.9	2.3	2.4	3.0	3.0
(7) Specialty has high status within medicine	3.6	4.0	3.3	3.4	3.2	2.6	2.0	2.0	3.8
(8) Specialty is fairly unscientific and imprecise	3.8	2.8	4.2	4.0	3.6	3.8	3.5	3.4	3.3
(9) Consultations with practitioner for a medical problem are only rarely helpful	3.8	3.2	3.3	3.6	3.6	4.1	3.7	2.8	4.2
(10) Entering specialty is waste of a medical education	4.3	4.0	4.4	4.4	4.4	4.8	4.6	4.2	4.7
(11) Men tend to enter specialty more than women	3.1	3.1	3.5	3.3	2.9	3.5	2.1	1.4	4.2
(12) Today's specialty does not have the time to deal with emotional problems of patients	2.5	3.4	2.6	2.5	2.8	3.7	2.1	2.4	3.0
(13) Specialists are often fuzzy thinkers	4.1	3.6	4.1	4.2	3.9	4.2	4.6	4.0	3.9
(14) Too little time is devoted to specialty in medical curriculum	2.5	3.5	3.1	3.7	3.4	3.6	3.7	3.6	2.6
(15) If student is interested in specialty as a career other students will try to dissuade him or her	4.0	3.5	3.5	3.5	3.9	4.1	4.0	3.3	3.8
(16) Practitioners in specialty are too frequently apologetic when teaching their subject	3.9	3.3	3.9	3.8	3.8	3.9	4.1	4.1	3.3
(17) Women tend to enter specialty more than men	3.1	3.0	2.9	3.4	3.5	2.9	4.1	4.5	3.0
(18) Practitioners frequently abuse their power and hospitalise patients against their will	4.2	3.7	4.5	4.4	3.9	4.1	3.6	3.8	4.4
(19) Specialty is unrewarding because treatment is so lengthy and results so inconclusive	3.9	3.2	4.4	4.1	4.0	4.4	3.8	4.3	4.3
(20) Practitioners spend too much time seeing patients who don't need their care while ignoring those who do	4.0	3.6	4.2	4.1	3.8	4.6	3.4	4.0	4.0
(21) Students who express an interest in specialty are seen by their peers as "materialistic"	4.2	4.0	3.8	4.2	3.8	4.4	4.0	3.3	4.1
(22) Practitioners are more concerned than other doctors to establish rapport with their patients	3.7	2.0	3.9	4.2	2.9	2.5	3.9	3.8	2.0
(23) Practitioners talk a lot but do very little	3.6	3.1	3.8	3.8	3.7	4.1	3.6	4.1	3.8
(24) On the whole, people taking up training in specialty are running away from participation in real medicine	3.9	3.8	3.7	3.8	4.1	4.6	4.1	4.3	4.6
(25) Practitioners tend to be less stable than the average doctor	4.2	3.1	4.0	3.9	4.0	4.5	3.6	3.5	4.5
(26) Treatment by practitioners in specialty causes patients to worry too much about their symptoms	3.4	3.1	3.8	3.8	3.5	4.2	2.6	3.2	4.2
(27) Practitioners get less satisfaction from their work than other doctors	3.9	3.8	3.5	4.0	4.1	4.7	3.9	4.5	4.1
(28) These days specialty is the most important part of curriculum in medical schools	4.4	4.1	4.5	3.9	4.4	4.0	2.6	4.2	4.4
(29) Most so called facts in specialty are really just speculations	3.8	2.6	3.9	3.9	3.8	3.9	3.5	3.9	4.0
(30) Practice of specialty allows for development of really rewarding relationships with people	3.7	2.9	4.0	3.9	3.1	2.4	3.7	3.7	2.1
(31) Patients in specialty are often more interesting to work with than other patients	3.7	3.1	4.0	3.7	3.3	2.4	3.7	3.5	3.4
(32) Practice of specialty is basically fraudulent, since there is no strong evidence that it is effective	4.1	3.8	4.6	4.3	4.1	4.3	3.9	4.3	4.5
(33) Most medical students report that their undergraduate training in specialty has been valuable	3.1	3.0	3.2	2.2	2.6	2.5	2.5	2.6	2.9
(34) Specialty is attractive as a discipline because it is more intellectually comprehensive than other medical specialties	3.3	3.4	3.5	3.3	3.3	3.0	3.0	3.8	3.4
(35) Courses in specialty are some of the easiest in medical syllabus	3.4	3.1	3.3	3.9	3.0	3.6	3.8	3.5	3.1
(36) Despite considerable research there are few replicable results in specialty	3.7	3.1	3.5	4.0	3.6	3.9	3.8	4.0	3.5
(37) Theories in specialty are far removed from actual practice of this aspect of medicine	3.4	3.1	3.5	3.9	3.7	3.8	3.5	3.9	3.5
(38) Research in specialty has shown considerable inability to detect improvement on long term basis	3.5	3.0	3.6	3.7	3.6	3.8	3.6	3.8	3.4
(39) Specialty is one of the most emotionally demanding of the medical specialties	3.7	2.6	2.9	4.0	3.2	2.1	3.2	3.4	2.8
(40) Practitioners tend to overconceptualise their subject matter	3.1	2.7	3.3	3.3	3.4	3.5	2.9	3.2	3.3
(41) Specialty is more an art than a science	3.5	2.5	3.7	3.9	3.4	3.1	3.1	3.5	2.9
(42) The most intelligent doctors tend to enter specialty	3.9	3.9	4.0	4.0	4.0	3.6	3.6	4.0	3.9
(43) Patients in specialty hardly ever get better	3.8	3.3	4.5	3.5	4.0	4.4	3.9	4.3	4.2
(44) There are too many doubts about future of specialty to choose it as a career	3.9	3.7	4.2	4.0	3.7	4.3	3.8	4.2	4.4
(45) Practitioners are on the whole less dogmatic than other doctors	3.7	2.7	3.4	3.6	3.4	3.2	3.7	4.0	3.2
(46) Practitioners are held in poor regard by most other doctors	3.1	2.3	3.0	3.1	3.7	4.0	4.2	3.7	2.4
(47) Practitioners are at forefront of movement to humanise medicine	3.8	3.0	3.8	4.0	3.6	2.8	4.1	4.3	2.6
(48) Practitioners tend to treat the whole person rather than just the physical illness	3.5	2.1	3.2	4.0	3.1	2.4	4.1	4.2	2.3
(49) Within medicine, specialty is one of the less important areas	3.9	3.8	3.9	4.3	3.9	4.2	3.9	4.2	4.4
(50) Patients in specialty make more emotional demands on doctors than do other patients	3.2	2.3	3.8	3.8	2.6	2.5	3.8	3.9	2.6

Items in italics are extremes and were statistically significantly different from each other. One way analysis of variance on each item showed that each was significantly different. Full statistical analysis may be obtained by writing direct to AFF.

doctors; psychiatrists tended more to treat the whole patient; psychiatry was the least important area of medicine; and psychiatric patients tended to make more emotional demands than other patients.

Radiology—Compared with other specialties radiology was thought to have advanced considerably in recent years and to have the most rapidly expanding frontier; yet the problems presented by patients were not particularly interesting or challenging. Too little time was devoted to radiology in the medical curriculum.

Anaesthetics—Compared with the other specialties anaesthetics was seen to be taught in the most boring and irrelevant way; but it was most scientific and precise; anaesthetists were least likely to abuse their power; students taking up anaesthetics training were running away from practising real medicine; anaesthetists got less satisfaction from their work than other doctors; anaesthetics was the least important part of the curriculum; anaesthetists did not allow for the development of rewarding relationships; anaesthetists' patients were the least interesting to work with; anaesthetics was the least fraudulent and hence most effective; yet most medical students report that their anaesthetic training has been valuable.

Pathologists—The students agreed that pathologists earned less than other doctors; that (not surprisingly) they were least concerned to establish rapport with their patients; that pathology training was most valuable; that pathology was one of the hardest courses but least emotionally demanding; and, finally, students disagreed most that the course was more of an art than a science.

Gynaecologists were seen as making the most money; gynaecology was the easiest course in the medical syllabus; and, along with others, less intelligent doctors became gynaecologists.

Paediatricians were often rated on the extremes. They were perceived as the most emotionally stable group. It was also agreed that paediatrics was the least waste of the medical education; that paediatricians had time to deal with their patients' emotional problems; that fellow students will not dissuade someone from wanting to enter paediatrics; that more women than men specialised in paediatrics; that it was possibly the most rewarding specialty; that paediatricians did not spend much time seeing the wrong patients; that paediatricians were the least materialistic; that they did not talk a lot but did little; that they tended to be more stable than the average doctor; that they got most satisfaction from their work; and that paediatrics was attractive because of its intellectual comprehensiveness. The students believed that paediatricians had the most ability to show long term improvement; that paediatrics was one of the most emotionally demanding of the specialties; that paediatricians tended least to over conceptualise their subject matter; that the most intelligent doctors become paediatricians.

Specialists in hospital medicine were seen to have the highest status, as not having enough time to deal with patients' emotional problems, and as the least fuzzy thinkers; yet students disagreed most that too little time was devoted to hospital medicine in the curriculum. Specialists in hospital medicine were also seen as frequently abusing their power and to spend too much time seeing patients who do not need their care; yet they agreed that hospital medicine was the most important part of the medical curriculum and that specialists in hospital medicine were held in highest regard by other doctors.

Surgeons—Compared with the other specialties it was perceived that men tended to specialise in surgery more than women; but curiously that students would dissuade each other from entering surgery. Surgeons were seen as the least apologetic when teaching their subject and as the most materialistic of all the specialists; surgery was least attractive because of its intellectually comprehensive manner; most results were replicable in surgery and theories least removed from actual practice. Compared with other specialists, however, surgeons appeared to be the most dogmatic, least interested in humanising medicine, less concerned about treating the whole person, and least susceptible to the emotional demands of patients.

General practice was seen as the most interesting of the specialties in the way that it was taught in medical school; consultations with a general practitioner were frequently helpful; women tended to specialise in general practice more than men; general practitioners were too often apologetic when teaching their subject; people who chose general practice were not running away from participation in real medicine; treatment by a general practitioner did not cause patients to worry too much; by and large facts in general practice were not mere speculations; general practice allowed for the development of rewarding relationships; and general practitioners were at the forefront of the movement to humanise medicine. The students did not believe that there were too many doubts about general practice to choose it as a career and they believed that within medicine general practice was one of the most important aspects.

Three further analyses were performed, which will be described only briefly here. Firstly, factor analysis was performed on the 50 questions in order to determine their factor structure. Ten clear factors emerged, which concerned such things as unscientific status and ineffectiveness of the specialty, recent advances in the specialty, and sex differences in choice of specialty. That the factor structure was clear and that so many factors emerged suggest that medical students' attitudes to the specialties were far from unidimensional. Rather than having a simply positive or negative view their attitudes and beliefs were subtly structured.

Secondly, a discriminant analysis was performed giving a territorial map of the nine specialties. The specialties fell into three of the four quadrants. The two dimensions seemed to be soft or hard (the x axis) and general or specific (the y axis), so that general practice was seen as soft (scientifically) and general (in the sense that it dealt with various aspects of the patient), while surgery was hard (scientifically) yet neither general nor specific. Interestingly and predictably general practice and psychiatry were both on the extreme of one dimension (soft) yet almost at opposite ends on the other

(general). Hence both were seen as scientifically soft, but whereas general practice dealt with a very wide variety of patients and illnesses psychiatry dealt specifically with mental illness.

A series of two way analyses of variance were also computed (year: preclinical v clinical student \times specialty) on the individual items and factor scores. By doing so it was possible to see if there was any difference between clinical and preclinical students' views. Roughly a third to half of the individual attitude statements and factor score totals showed a significant difference. To summarise the overall pattern very briefly, it seemed that the clinical students (fifth year) were more moderate in their opinions than the preclinical students (second year). Thus the clinical students were more favourable to the specialists usually having lowest status—that is, in psychiatry—and less favourable to the specialists having highest status—that is, in surgery. Specifically, five of the 10 attitudinal factors yielded significant differences. Clinical students believed that doctors in hospital medicine had better, and psychiatrists worse, patient relationships than did preclinical students. Compared with the more inexperienced preclinical students the clinical students thought anaesthetics and hospital medicine more ineffective and gynaecology and pathology less effective. Further, the clinical fifth year students believed that anaesthetics, general practice, hospital medicine, and radiology were of lower status and more likely to be chosen by women than did the preclinical students. The clinical students, however, disagreed more strongly than the preclinical students that gynaecology, paediatrics, and psychiatry were of lower status but believed surgery to be of lower status than agreed to by the preclinical students. Finally, clinical students disagreed more than preclinical students that general practitioners, gynaecologists, and pathologists were "fuzzy thinkers" but agreed more with regard to anaesthetists and radiologists. Since this was a cross sectional rather than longitudinal study it is not possible to attribute causes of the differences with certainty, though a likely explanation remains the formal teaching and secondary ward experience of the clinical students.

Discussion

The aim of this study was to examine the attitudes of a fairly large number of medical students to various specialties. Previous research suffered from restricting responses to a limited number of stated beliefs or to a limited number of specialties or students, or both.

While many of the findings might be described as predictable, others may be new to teachers and practitioners. Thus whereas it may come as no surprise (though a source of despair to psychiatrists) that medical students remain sceptical about the effectiveness, status, and credibility of psychiatry¹⁹ but are generally very positive about paediatrics, they may be surprised to note that medical students believe that gynaecology is the easiest of courses, and that the least intelligent doctors become gynaecologists, and that surgeons are the most materialistic. Thus, as nearly all studies have shown, students' attitudes and beliefs are multidimensional, and whereas a specialty may be seen as highly positive on one dimension it may be seen as highly negative on another. It is probably the relevance of those various dimensions for individual medical students—that is, their personal values—that best predicts their choice, rather than a general positive or negative dimension.

Three important points need to be made about the relevance of such studies. Firstly, by ascertaining the beliefs of medical students it is possible to attempt to enhance, maintain, or change them. In order to change erroneous beliefs or unhelpful attitudes (and to demonstrate the effect of the intervention) it is first necessary to establish what these beliefs are. In some instances these beliefs may be rebuffed by presentation of the "facts"—for example, consider item 35 ("... courses are some of the easiest in the medical syllabus"), item 42 ("The most intelligent doctors tend to become..."), and item 43 ("... patients hardly ever get better"). The validity of these beliefs may be partially tested by, for instance, looking at failure rates in different courses, A level or intelligence test scores of different specialists, and prognosis figures for various illnesses and various treatments. Thus we need to know these attitudes and beliefs in order to alter them in any set way.

Secondly, these beliefs change over time—partly as a function of doing specific courses, coming into contact with charismatic or persuasive individuals, experiencing certain patients, etc. They also change from one generation to another as specific specialties make important advances. This study showed that whereas some attitudes tended to change to some specialties others did not. Overall, clinical

students were more moderate in their views, but this was a matter of degree rather than kind: though clinical students were more sympathetic to the low status specialties (on various items and dimensions) than were preclinical students, there was still a consensual view of the specialties. Nevertheless, other studies that compared stereotypes before entering medical school and at the final year found little change, suggesting that "either the stereotypes were impervious to reality or else they reflect it."²⁰

Thirdly, studies such as this may help determine what factors influence students' beliefs and attitudes. Thus if we examine various demographic (sex, age, education), psychographic (personality, belief systems), and experiential (contact with specialists, patients, clerkships) factors as they relate to beliefs about the specialties we may be able to understand the process whereby these attitudes and beliefs are established. This research may also provide the evidence to test various theories. For instance, Nielsen and Eaton discussed six theories or hypotheses to explain the decline in medical graduates entering psychiatry¹⁹: the family practice hypothesis (would-be psychiatrists have chosen to become general practitioners); negative socialisation hypothesis (peers and other specialists are implicitly and explicitly against psychiatry); role confusion hypothesis (students are not sure of the roles and responsibilities of psychiatrists); social criticism hypothesis (the media in general are against psychiatry); the financial hypothesis (students have preferred to choose higher paying specialties); and the admissions hypothesis (students interested in a psychiatric career are not admitted as frequently). From their own study on medical students' attitudes Nielsen and Eaton were able to specify the evidence for and against each hypothesis.¹⁹

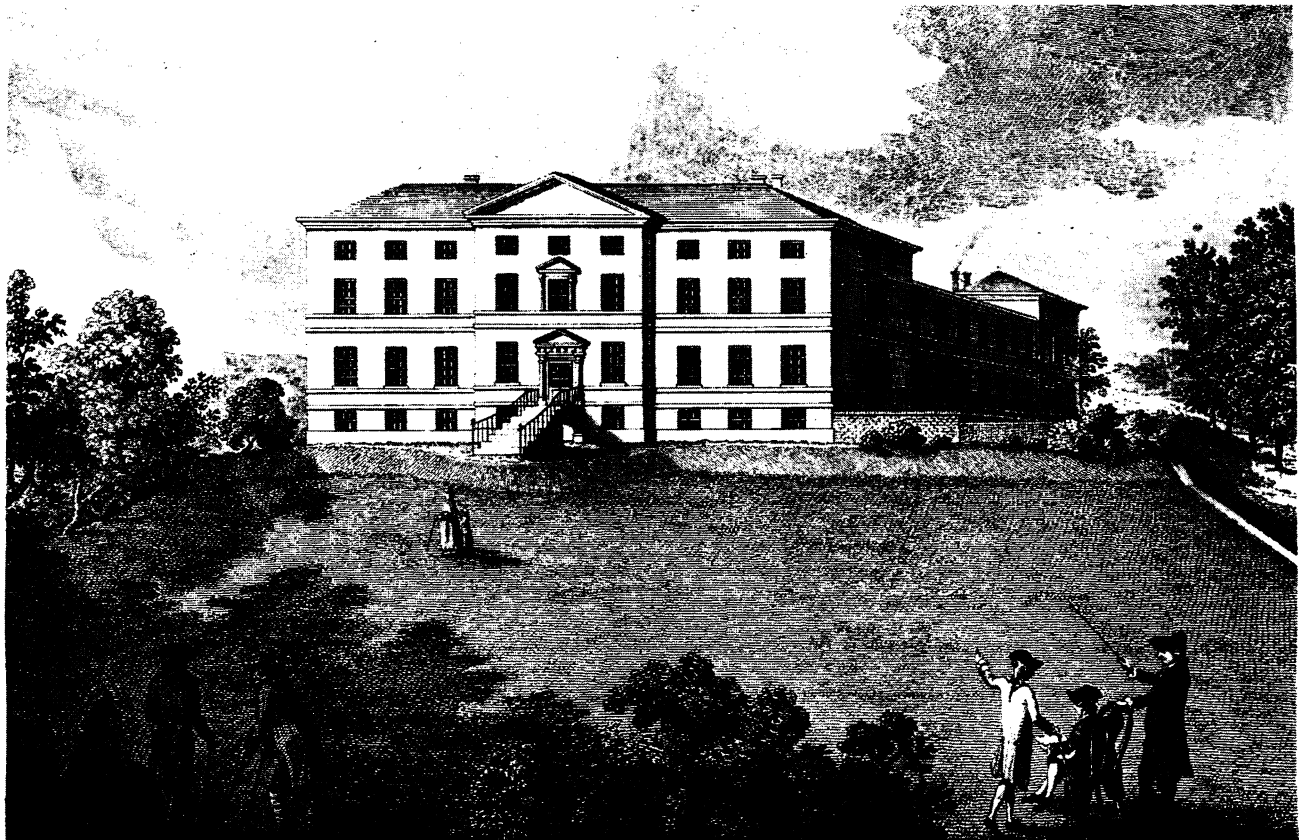
These beliefs may be an important factor in predicting what branch of medicine students opt for, though plainly it is not the only one. As Matteson and Smith noted, students do not always choose the specialty they prefer, proffering as reasons low demand, too heavy demands on time, dislike of the patients, etc.⁹

This has been a cross sectional study. To best determine predispositional versus socialisation factors in the choice of a

medical career longitudinal research needs to be done. It is only by this method that we may properly determine whether the socialisation at medical school or the students' underlying values, abilities, and beliefs are the main factors in choice of occupation. But what this study has done is tested a robust and reliable questionnaire and established the present pattern of medical students' beliefs and attitudes.

References

- O'Connell M, Brighton F. Students' career plans and the medical profession. *J Med Educ* 1979;54:59-11.
- Lau A, Offord D. A study of student attitudes toward a psychiatry clerkship. *J Med Educ* 1976;51:919-28.
- Wilkinson G, Greer S, Roone B. Medical students' attitudes to psychiatry. *Psychol Med* 1983;13:185-92.
- Egerton E. Career preference enquiry among Queen's University medical undergraduates and graduates: a follow-up. *Med Educ* 1983;17:105-11.
- Egerton E. Choice of career of doctors who graduated from Queen's University, Belfast, in 1977. *Med Educ* 1985;19:131-7.
- Carline J, Cullen T, Dohner C, Schwartz R, Zinser E. Career preferences of first and second year medical students. *J Med Educ* 1980;55:682-91.
- Fishman D, Zimet C. Speciality choice and beliefs about specialties among freshman medical students. *J Med Educ* 1972;47:524-33.
- Kritzer H, Zimet C. A retrospective view of medical speciality choice. *J Med Educ* 1967;42:47-53.
- Matteson T, Smith V. Selection of medical specialties: preferences versus choices. *J Med Educ* 1977;52:548-54.
- Eisenberg J. Sculpture of a new academic discipline: four faces of academic general internal medicine. *Am J Med* 1985;78:283-93.
- Nielsen A. The magnitude of declining psychiatric career choice. *J Med Educ* 1979;54:632-7.
- Taintor Z, Nielsen A. The extent of the problem: a review of the evidence concerning the declining choice of psychiatric careers. *J Psych Educ* 1981;5:63-87.
- Talbot J, Granet R. Careers in psychiatry: options for the future. *Compr Psychiatry* 1984;25:263-77.
- Bruhn J, Parsons O. Medical students' attitudes to four medical specialties. *J Med Educ* 1964;39:40.
- Bruhn J, Parsons O. Attitudes toward medical specialties: two follow-up studies. *J Med Educ* 1965;40:273-80.
- Twaddle A, Hessler R. *A sociology of health*. New York: Wiley, 1977.
- Parkhouse J, Parkhouse H, Hambleton B, Bullock N. Careers of doctors qualifying in Britain in 1974. *Health Trends* 1981;13:55-105.
- Hutt R, Parsons D, Pearson R. *The determinants of doctors' career decisions: summary*. Sussex: Institute of Manpower Studies, 1979.
- Nielsen A, Eaton J. Medical students' attitudes about psychiatry. *Arch Gen Psychiatry* 1979;38:1144-54.
- Harris C. Medical stereotypes. *Br Med J* 1981;283:1676-7.



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