

Motives for choice of specialty during and after medical school

Abstract

Background. The basis for medical doctors' preference and choice of specialty is a complicated mixture of individual interests and future employment opportunities. We wanted to investigate explanations for such preferences and choices.

Material and methods. Two nationwide groups of Norwegian doctors received four questionnaires on specialisation preferences and possible reasons for them, between 1993 and 2003. One group of doctors (n = 421) had begun their medical studies at Norwegian universities in 1993, and the other group (n = 631) had completed medical school in 1993 or 1994. We used both graphics and multi-level models to investigate changes in the patterns of motivation.

Results. Individual specialty preferences varied widely, both during and immediately after completion of studies, but the distribution between specialties was relatively stable. After completion of medical school, the influence of prestige as an explanatory variable for specialty preference decreased and the importance of an optimal balance between work and private life increased, even after controlling for the increased proportion of female doctors. Those who chose surgery or internal medicine were more motivated by medical challenges and career possibilities, while those who chose psychiatry or general medicine were more motivated by conditions such as variety and diversity, and having time for family.

Interpretation. Rationales behind the choice of medical speciality are complicated and difficult to interpret – they appear to be based on a combination of ambitions and prestige on one hand, and on lifestyle and family considerations on the other. Recruitment to positions with low status could probably be increased by better organisation of social conditions and by improving the possibilities for leading normal family and social lives.

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These days a doctor is almost always a specialist, and the specialty status is a crucial component of any individual doctor's identity. Nevertheless, many doctors find that their choice of specialty is somewhat arbitrary. In 1997, the median time from receiving qualification as a medical doctor to obtaining a specialty was eight years in Norway, and many doctors changed their specialty during the specialisation period (1). Thus, the rationale or motivation behind the final choice of specialty appears to be rather complex.

There is no clear association between the number of specialists in the various medical fields, and the need for them. Examples of topical «under-stocked» fields are psychiatry and geriatrics. For other fields, it could be considered that there are too many specialists, even though this is more difficult to demonstrate.

Both diseases and medical specialties have their own hierarchical structures (2, 3). It appears to be easier to recruit specialists to fields that have a high status rather than to those lowest on the ladder, such as psychiatry and geriatrics. In a previous study of how the specialty preferences of Norwegian medical students altered, from the beginning of their studies in 1993, up to halfway through their studies, the main tendency was a movement upwards in the specialty hierarchy (4, 5).

Material and methods

This research was conducted as a prospective, unbalanced, and anonymous cohort study with two groups of participants, and distribution of questionnaires on four occasions between 1993 and 2003. An unbalanced cohort study is a prospective study, which allows subjects to join or drop out of the study during the study period.

The first group «the student group» com-

prised 421 students (189 men and 232 women) who started their basic medical studies at Norwegian universities and received the first questionnaire in 1993. Questionnaires were also distributed in 1996 and 1999; a number of new students were included, whilst a few dropped out of the study. The last questionnaire round was in 2003, and by then most of the students who were first included had begun their specialisation.

In the second group, «the doctor group», all those who had completed their medical exams at Norwegian universities in 1993 and 1994 (n = 631) received the first questionnaire in their final year of study, with the follow-up questionnaires being sent to them during their house physician period (1994/95), and during specialisation (1997/98). The final questionnaire round in this group was in 2003/04, by which time the majority of doctors had chosen or completed their specialty. Figure 1 is a flow diagram of the two groups.

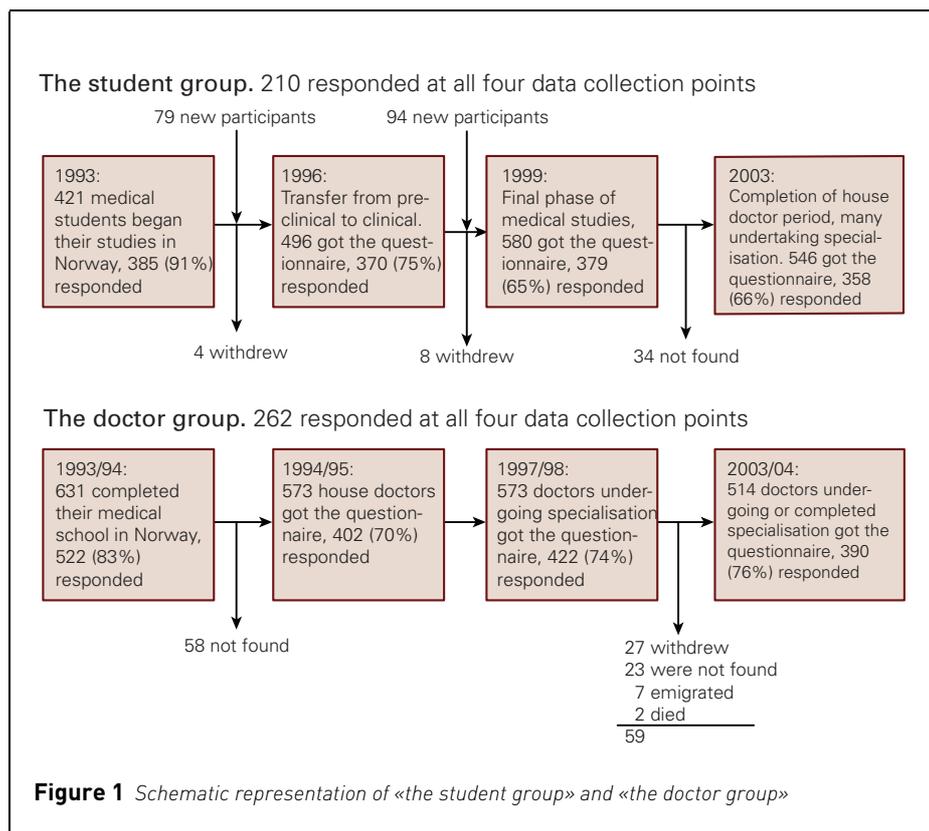
Grouping of specialties

In 1993, 1996 and 1999 the students were asked to choose the three professional fields of most interest to them from a list of 53. The 53 fields were categorised into five groups for simplification of the analyses: general medicine and social medicine; laboratory-based fields; internal medicine; surgery and psychiatry (e-tab 1).

The table also gives the prestige score for each of the specialties, as based on Alburn's

Main message

- Specialty preferences alter greatly both during and immediately after medical studies.
- More doctors choose to specialise within general medicine, psychiatry, and laboratory-based medicine than what could be expected from preferred specialty earlier in their studies, whilst most of the surgical specialties obtain fewer specialists than expected.
- The explanation can be that young doctors place greater emphasis on family and private life, which means they turn away from specialties that demand a large amount of work at night and long periods away from home.



previous studies (2, 6). Album, however, scored only 22 specialist fields and sub-specialties, (marked by an asterisk in the Table). The other fields have been ranked to one of these 22 levels, depending on our assessment. For the student group, we have calculated three «prestige indexes»; based on the most popular medical specialties at the beginning of their studies, halfway through their studies, and at the end of their studies.

Rationale behind choice of specialty

At each data collection point, the participants were asked to assess the importance of 26 conditions when they answered the question: «How important do you believe the following factors will be for you when you, as a doctor, will choose your working environment and your specialty?» The doctors who had completed their training received the same list, but with the following opening question: «How important are/were the following factors for you when you chose your work environment and/or your specialty?» These questions are repeated in table 2. The response options were given numerical values from 1 (not important) to 4 (very important) and five for «don't know». The answers were dichotomised to «important» (important and very important) and «not important» (not important, slightly important, don't know) and combined into three motive types – «active», «defensive» and «integrated» (tab 2). The classification of types was based on a combination of explorative factor analyses and our own discretion.

Motive goals were studied further, the effect of age, sex, and specialty on changes in motivation factors over time, in the student group with a multivariate, multi-level model with repeated measurements. SPSS version 14 was used for the analyses.

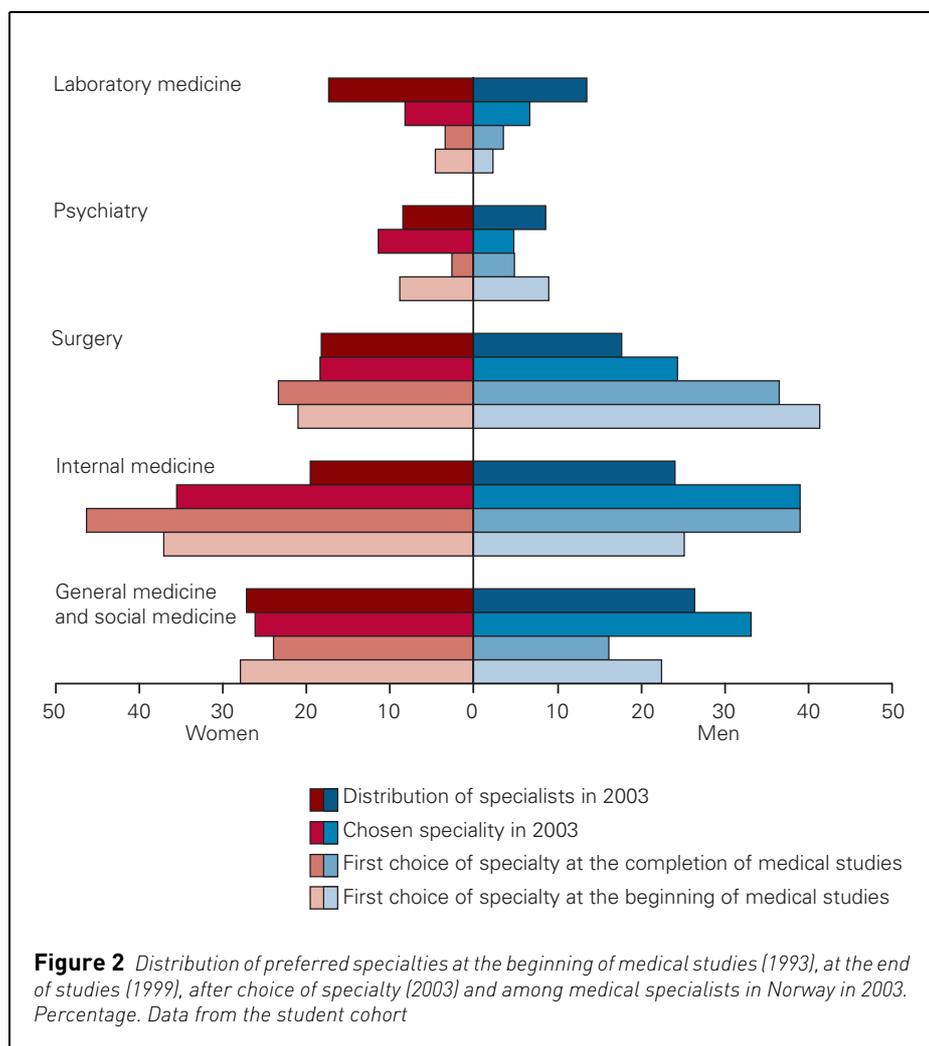
Results

Figure 1 shows responses by time-points for both groups. The proportion of women among those who participated at least once was 57 %, and in 1993/94 the mean age for both groups together was 28.1 years.

Choice of specialty

The student group. In 2003, 78 % (282/358) of participants had chosen their medical specialty. Figure 2 shows a comparison of the distribution between sexes and main specialty group in 2003 (this study) and that of all active Norwegian medical specialists the same year. The distribution of specialty preferences with respect to start and completion of medical studies is also shown.

Which specialty any individual preferred varied greatly during the course of their studies. We wanted to investigate whether an individual's preference moved from one specialty group to another. By assigning one point for each time a medical student's preference moves from one main specialty group to another, we obtain a variable which



ranges from 0 (those who remained in the same group throughout the study) to 3 (those who had moved to a new group on each data collection). The mean value for the 167 individuals who had chosen their specialty by the end of the study, and who had indicated a specialty's preference on each of the four occasions of data collection, was 1.49. The most stable field of specialty – surgery – had a mean value of 1.15 (95 % CI 0.66–1.64). For gynaecology the mean value was 1.17, for internal medicine 1.23, for anaesthesia 1.50, for psychiatry 1.70, for general medicine 1.86, and for those who chose a laboratory-based field the mean number of changes was 2.08 (95 % CI 1.56–2.60).

Figure 3 also illustrates this lack of stability in the student group's specialty preferences. The proportion that chose a particular specialty remained rather stable, but the groups consist of different individuals at the various time-points.

The doctor group. Figure 4 shows that there was also a comparatively comprehensive change in preference for particular specialties among doctors who had completed their studies. The distribution of doctors between the groups of specialties in 1997/98 and 2003/04 is quite similar, but almost 50 % of the individual doctors changed their specialty preference in this period.

Specialty prestige. Album's prestige ranking was used as a possible explanation for the development and change in specialty choices. Among female medical students in particular, there was a trend towards choosing increasingly prestigious specialist fields during their studies, but a significant «prestige loss» occurred when the specialty was actually chosen in 2003 (fig 5).

Rationale for choice of medical specialty

Table 2 shows the proportions that gave positive answers to each of the 26 statements on possible reasons for choosing a particular specialty; in 1993, 1996, 1999, and 2003. Additionally, all the statements are ranked, based upon the mean score value obtained at each of the four data collection times. «Time for family» was the motive that received the most votes and «to avoid having to give bad news to the patients» received the least votes.

In order to investigate possible changes in rationale behind the choice of specialty, and differences in the motives associated with the choice of the various specialties over time, we used the combined mean values for the three motive types in a multi-level analysis of repeated measurements in the student cohort (tab 3 and tab 4). The motive types «active», «defensive» and «integrated» were used as dependent variables in three separate analyses, with sex, age, and choice of specialty in 2003 as independent variables (factors). The analyses demonstrated that there was a significant difference between the groups of specialty and non-specialists, and between

Table 2 Assessment of the statements «How important do you believe the following factors will be for you when you, as a doctor, will choose your working environment and specialty?» (1993, 1996 and 1999), or for students «How important are/were the following factors for you when you chose your field of work and/or your specialty?» (2003). The table shows percentages with a positive answer on the three different occasions and the ranking of the statements after horizontal addition. The mean value is given on a scale from 0 to 1 for the three main motive types

Active	1993	1996	1999	2003	Ranking
2 Challenges in life-or-death situations	22	19	25	24	20
3 Good medical career possibilities	41	42	48		14
5 Good administrative career possibilities	12	10	10	6	24
10 High degree of independence	64	67	68	67	6
14 Possibility for research	41	26	28	26	16
19 Considerable technical work/ hands-on work	24	21	27	27	18
21 Challenges in responsibilities and decision making	38	24	33	38	13
22 Good salary conditions	66	69	77	66	5
25 See results from work rapidly	28	33	39	38	12
Mean score «active»	0.37	0.35	0.39	0.36	
Defensive					
4 Avoid having to give bad news to patients	3	3	2	2	26
6 Possibility for part-time positions	23	35	40	24	15
7 Avoid negative media reports	8	19	10	3	23
9 Avoid seriously ill children	2	4	7	10	25
11 Small amount of «on call» duties	23	46	44	46	11
13 Can make mistakes without resulting in enormous consequences	20	24	22	15	21
15 Avoid work environments obsessed with career advancement	30	27	29	24	17
24 Complaints about incorrect treatment are rare	16	21	25	13	22
Mean score «defensive»	0.16	0.22	0.22	0.18	
Holistic					
1 Interested in this professional field	97	99	98	91	7
8 Possibilities for child care places	41	43	55	22	10
12 Possibilities for permanent job	91	88	89	66	3
16 Diversity and variety	88	89	93	86	2
17 Living in a selected place	48	52	57	62	8
18 Socially important field	54	38	38	38	9
20 Considerable contact with patients	86	81	76	69	4
23 Time for family	94	93	97	83	1
26 Social and psychological factors	34	21	23	16	19
Mean score «comprehensive»	0.70	0.67	0.69	0.58	

men and women, and that the impact of the three motive types decreased over time.

Women scored significantly lower than men on the «active» motives and higher on the «defensive» and «comprehensive» motive types. In the comparison with non-specialists, surgery had a high score for «active» and a low score for «defensive». The scores for «active» motive types increased over time, but were reduced over time for «defensive». The score for internal medicine was also low for «defensive», and the score decreased over time. Psychiatry scored highly for «integrated», and this score increased gradually over time. General medicine scored somewhat higher than the non-specialists for «defensive», but the difference was not significant.

Discussion

In comprehensive prospective studies, there is always a problem with drop-outs during the course of the study, as was the case for this one. Nevertheless, we believe that the representation within our groups was satisfactory. Complete participation (i.e. responding on all four occasions) of 50 % in the student group and 42 % in the doctor group should be considered sufficiently satisfactory. The actual N value in the multi-level analyses is higher as all those who answered on at least two occasions are included in the correlation matrices (for the student cohort N ranged between 260 and 286). The data are strengthened by the fact that 91 % of participants in the student group and 89 % in the doctor group responded at least

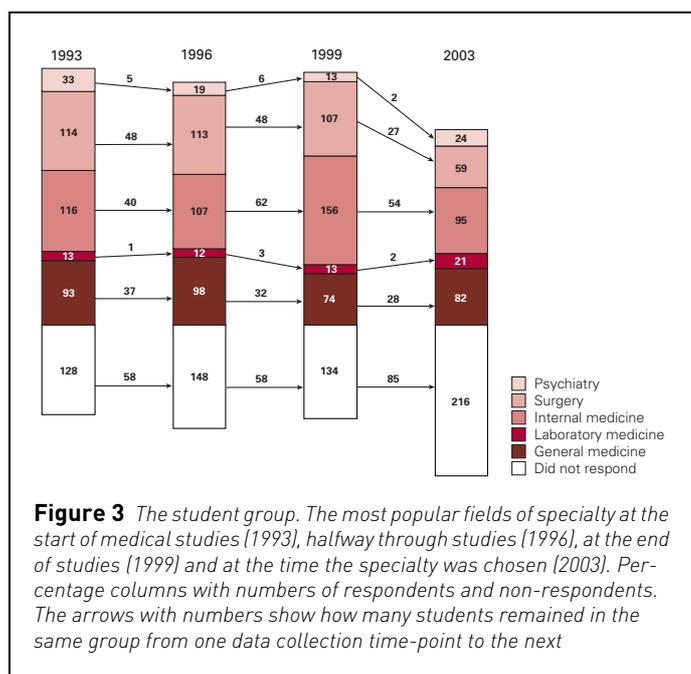


Figure 3 The student group. The most popular fields of specialty at the start of medical studies (1993), halfway through studies (1996), at the end of studies (1999) and at the time the specialty was chosen (2003). Percentage columns with numbers of respondents and non-respondents. The arrows with numbers show how many students remained in the same group from one data collection time-point to the next

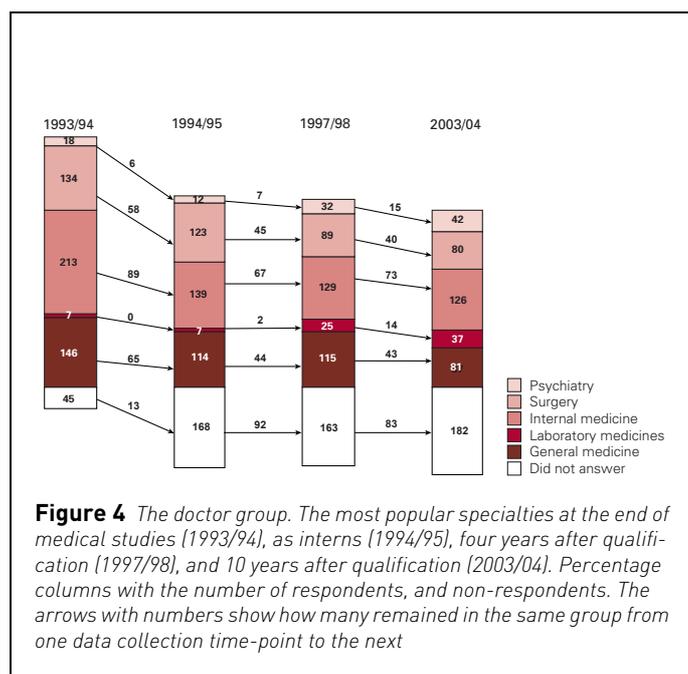


Figure 4 The doctor group. The most popular specialties at the end of medical studies (1993/94), as interns (1994/95), four years after qualification (1997/98), and 10 years after qualification (2003/04). Percentage columns with the number of respondents, and non-respondents. The arrows with numbers show how many remained in the same group from one data collection time-point to the next

on one occasion. A further strength of this study is that it includes complete cohorts of Norwegian students and doctors, rather than random or stratified samples from each group.

The most conspicuous finding was the magnitude of change in individual preferences and choices regarding specialty, which continues long after completion of medical studies. However, at the same time the proportion of doctors who chose surgery, internal medicine, general medicine, or psychiatry as their career paths changed negligibly. This can perhaps be explained by

actual demand. However, it appears that the pattern is established almost from the start of medical studies, and long before the students have begun to consider the options for their working lives.

Multi-level analyses of motivation scores show that there are also differences between the medical fields. It appears that men who were particularly concerned about their careers, independence in the work environment, the possibility for undertaking research, and other aspects of the «active» motive type, increasingly turned towards the professional specialties of surgery. Women

who were concerned with organising work conditions so they could have a stable family life, and were interested in work with variety and diversity, as well as other aspects of the «integrated» motive type, turned towards psychiatry.

Psychiatry and laboratory-based medicine appear to be «winners» in that more physicians choose these specialties than what could be expected from those who indicated them as preferred specialties at the end of their medical studies or as house doctors. In addition, psychiatry seems to «win» further specialists in the period 4–10 years after qualification (the doctor group) – which is perhaps a positive signal when considering future needs. There might also be an association between this and a relatively large number of newly established positions created to strengthen the field of psychiatry. A Canadian study showed that those who chose psychiatry were doctors who were interested in mental health before they began to study medicine and doctors who made their choice through an elimination process based on positive experiences with psychiatry during the course of their studies and during specialisation, as well as negative experiences from other specialties (7). This tendency might also perhaps be associated with the increasing number of female doctors, who generally score significantly lower on the «active» motivation type.

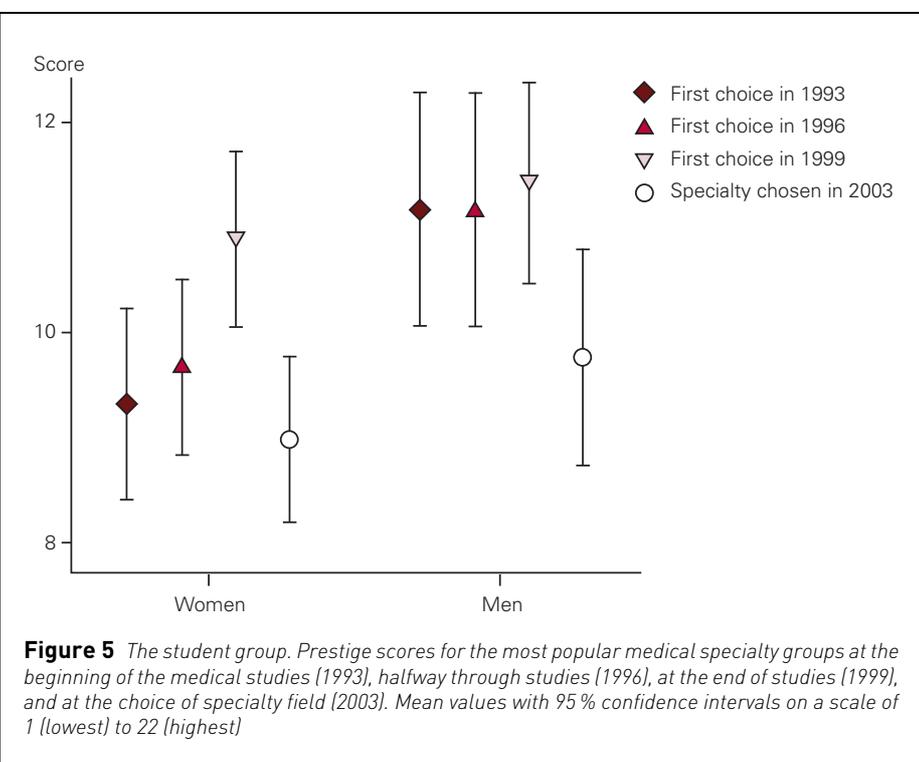
The fields of surgery lose candidates during the physicians' careers, but this study cannot give a realistic picture of the surgery group due to its heterogeneity. Orthopaedic surgery is one of the specialties with good recruitment (8). From this study, we are unable to analyse the patterns or the prognoses for the individual specialties because the data sets are too small. It is worth noting that

Table 3 Change in motive types over time, from T1 to T4, and differences in motive scores between specialty groups and non-specialists in the student group. A multi-level model was used; three separate analyses were made with repeated measurements of the three motive areas as dependent variables and with age, sex, and chosen specialty (group) in 2003 as independent variables. The reference for the specialty group is «non-specialist». Non-standardised beta values indicate the size (numerical value) and direction (positive or negative) of the actual effect and associated p-values. Significant values are italicised ($p < 0.05$)

	Active	Defensive	Holistic
Change T1 to T4 for all	<i>-0.06</i> $p = 0.038$	<i>-0.08</i> $p = 0.005$	<i>-0.40</i> $p < 0.001$
Age (changes per year)	0.00 $p = 0.531$	0.01 $p = 0.395$	<i>-0.01</i> $p = 0.019$
Women (compared with men)	<i>-0.27</i> $p < 0.001$	<i>0.17</i> $p < 0.001$	<i>0.12</i> $p < 0.001$
Surgery	<i>0.14</i> $p = 0.020$	<i>-0.12</i> $p = 0.027$	<i>-0.04</i> $p = 0.359$
Internal medicine	0.06 $p = 0.353$	0.00 $p = 0.993$	0.04 $p = 0.369$
General medicine	0.05 $p = 0.371$	0.08 $p = 0.095$	0.07 $p = 0.107$
Psychiatry	<i>-0.14</i> $p = 0.149$	<i>0.13</i> $p = 0.111$	<i>0.21</i> $p = 0.004$
Laboratory medicine	<i>-0.08</i> $p = 0.415$	<i>0.04</i> $p = 0.654$	<i>-0.13</i> $p = 0.077$

Table 4 Alteration in score for the three motive areas over time, from T1 to T4, for the specialty groups, controlled for age and sex, in the student group. The reference is «non-specialist». A multi-level model was used; three separate analyses were made with repeated measurements of the three motive areas as dependent variables and with interaction between time (T1-T4) and specialty group as explanatory variables. Non-standardised beta-values indicate the size (numerical value) and direction (positive or negative) of the change in score of the motive area and associated p-values. Significant effects are italicised ($p < 0.05$).

	Active	Defensive	Holistic
Surgery	0.32 <i>p = 0.001</i>	-0.22 <i>p = 0.006</i>	-0.12 <i>p = 0.216</i>
Internal medicine	0.06 <i>p = 0.202</i>	-0.29 <i>p = 0.001</i>	0.01 <i>p = 0.879</i>
General medicine	0.08 <i>p = 0.380</i>	-0.07 <i>p = 0.414</i>	0.14 <i>p = 0.110</i>
Psychiatry	0.11 <i>p = 0.421</i>	0.15 <i>p = 0.257</i>	0.37 <i>p = 0.008</i>
Laboratory medicine	0.04 <i>p = 0.794</i>	0.12 <i>p = 0.369</i>	-0.08 <i>p = 0.543</i>



ed in obtaining kindergarten places and having a normal family life. It can seem that recruitment to positions of low prestige in remote areas could be improved by taking into account that many young doctors are married to doctors, and that both would like to have both a satisfactory working life and a normal family life. It can also be expected that the increasing number of female doctors will result in a shift towards the more care-related specialties, which has been the case in Finland (11).

Declared conflicts of interest: None

References

- Gjerberg E, Aasland OG. Bruker leger for lang tid på å spesialisere seg? En undersøkelse av utdanningens varighet, utdanningsforhold og motiver for valg av spesialitet blant leger som ble godkjent spesialist i Norge i 1996-1997. Oslo: Legeforeningens forskningsinstitutt, 1999.
- Album D. Sykdommers og medisinske spesialiteters prestisje. Tidsskr Nor Lægeforen 1991; 111: 2127-33.
- Norredam M, Album D. Prestige and its significance for medical specialties and diseases. Scand J Public Health 2007; 35: 655-61.
- Wiers-Jenssen J, Vaglum P, Ekeberg Ø. Komende legers karriereplaner. Ambisjonsnivå og spesialiseringsplaner blant medisinstuderenter. Tidsskr Nor Lægeforen 1997; 117: 2807-11.
- Wiers-Jenssen J, Aasland OG. Endring i medisinstudenters karrierepreferanser under første del av studiet. Tidsskr Nor Lægeforen 1999; 119: 2858-64.
- Album D, Westin S. Do diseases have a prestige hierarchy? A survey among physicians and medical students. Soc Sci Med 2008; 66: 182-8.
- Manassis K, Katz M, Lofchy J et al. Choosing a career in psychiatry: influential factors within a medical school program. Acad Psychiatry 2006; 30: 325-9.
- Kvernmo HD. Ortopedisk kirurgi mot år 2030 - a future so bright you will need sunglasses? Oslo: Institutt for helseledelse og helseøkonomi, Det medisinske fakultet, Universitetet i Oslo, 2007.
- O'Herrin, JK, Lewis BJ, Rikkens LF et al. Medical student operative experience correlates with a match to a categorical surgical program. Am J Surg 2003; 186: 125-8.
- O'Herrin JK, Lewis BJ, Rikkens LF et al. Why do students choose careers in surgery? J Surg Res 2004; 119: 124-9.
- Riska E. Towards gender balance: but will women physicians have an impact on medicine? Soc Sci Med 2001; 52: 179-87.
- Buddeberg-Fischer B, Klaghofer R, Abel T et al. Swiss residents' speciality choices - impact of gender, personality traits, career motivation and life goals. BMC Health Serv Res 2006; 6: 137.
- Lambert TW, Davidson JM, Evans J et al. Doctors' reasons for rejecting initial choices of specialties as long-term careers. Med Educ 2003; 37: 312-8.
- Buddeberg-Fischer B, Dietz C, Klaghofer R et al. Swiss residents' arguments for and against a career in medicine. BMC Health Serv Res 2006; 6: 98.
- Sirovich BE, Gottlieb DJ, Welch HG et al. Regional variations in health care intensity and physician perceptions of quality of care. Ann Intern Med 2006; 144: 641-9.

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within surgery, men tend to move away from this field to a greater extent than women. An American study demonstrated that the choice of a career in surgery was also associated with the extent to which the students were able to participate practically in operations during the course of their studies (9, 10).

It has been shown that medical studies in Norway do not amplify segregation by sex in medical specialty preferences (5). This research indicates that the same applies to the period as intern and the first years as a doctor. Nevertheless, the analyses show that women and men have different preferences and priorities regarding career and choice of specialty. This concurs with results from studies in Finland and Switzerland (11, 12).

Alterations in career preferences generally move towards less prestigious medical specialties than the ones originally considered. Whether the doctors actually become less interested in the more prestigious fields, or the cause for this change is more pragmatic cannot be explained by our data. However, studies from abroad show that this type of retraction from more prestigious fields is associated with the young doctors realising how choice of certain specialties or types of work may result in an extensive strain on their private lives (13-15).

Will the new knowledge obtained from this survey have an effect on recruitment to the specialties? The doctors who choose psychiatry have least interest in acute medicine and a good salary and are more interest-