

# Primary care in Switzerland – no longer attractive for young physicians?

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## Summary

**Background and objectives:** a trend away from primary care (PC) to other specialties has been noted in Switzerland, as well as in the health-care systems of many other Western countries. The objective of the present study was to ascertain how many third-year residents graduating in 2001/02 from medical schools in German-speaking Switzerland wanted to become PC physicians (PCPs), whether this career goal was continuously followed, and how many subjects switched to or away from PC during residency.

**Methods:** data reported are from the third assessment of the longitudinal Swiss physicians' career development study, begun in 2001. In 2005, at the third assessment, 515 residents (53.8% females, 46.2% males) were asked what specialty qualifications and career goals they aspired to. In addition, participants' socio-demographic, personality, and career-related characteristics as well as their life goals were addressed.

**Results:** of  $n = 515$  (total sample) third-year residents, 81 had not yet decided on the medical field in which they wished to specialise, while 434 had made this decision. Of the latter, only 42 (9.7%) aspired to become PCPs. Twelve of the 42 future PCPs consistently mentioned PC as a career goal

from graduation throughout residency. The other 30 subjects only decided on PC during the course of their residencies. A switch away from PC was also noted in the case of 19 subjects who on graduation or after the first year of residency aspired to become PCPs, but abandoned this goal after three years of residency. Future PCPs differ from those pursuing other specialties in terms of personal and career-related characteristics, as well as in their life goals, insofar as they are less career-orientated and regard having more time outside work a priority. There are few gender-based differences between female and male future PCPs.

**Conclusion:** primary care seems to hold little attraction as a career goal for young physicians. Residency experiences would seem to have more of an effect on choice of specialty than teaching experiences during medical school. The percentage of subjects qualifying in PC is far too low to fill the need for the future generation of PCPs. In addition to efforts to incorporate PC issues into medical school curricula, structured residency programs should be established to promote PC.

**Key words:** residents; aspired-to specialty; career goal; primary care; other medical specialties

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## Introduction

In the last decade, a marked shift away from primary care (PC) to medical specialties has taken place in the health-care systems of most Western countries, especially in those with competition-based health-care systems. In 2004, of all practicing physicians in Switzerland, only 20% were PCPs; and of all newly qualified physicians, only 15% specialised in PC [1]. An analysis of the number of newly opened private primary-care practices in Switzerland showed that from 1997 until 2000, an average of approx. 120 physicians per year

opened PC practices; amidst the discussion of a national restriction on accreditation of new practices ("Zulassungsbeschränkung"), 150 to 160 new PC practices started up in 2001–2003; after the enactment of the moratorium on accreditation in summer 2002, only 57 new PC practices were announced in 2004, and 71 in 2005 [2, 3]. To achieve a steady state for the current population's primary health care (0.63 general practitioners/1000 inhabitants [4]), about 160 general practitioners per year would have to open a new practice [2, 5]. In

Germany, the percentage of PCPs has declined from 60% of all actively working doctors in 1991 to 50% in 2004; however, only half of the physicians who qualified as PCPs in 2004 opened private practices [6]. In Great Britain, as reported in the BMA cohort study [7], one-third of the cohort physicians were working as PCPs ten years after graduation. In Norway, where 23% of all currently practicing physicians are PCPs [8], the percentage of newly certified PCPs has stood between 15 and 20% of all medical specialties per year over the last 5 years. In the US, there has also been a decline in the number of graduates going into PC, from 53.3% in 1997 to 21.3% of all graduates in 2005 [9]. An important factor for estimating the future requirement for PCPs is the age distribution of PCPs currently practicing. In the coming 10 to 15 years, about one-third of all PCPs currently practicing in Switzerland and Germany will retire, and, as seen in the statistics, nowhere near enough young PCPs are taking their places [5]. The shortage of physicians providing basic health care is not only being noticed in rural regions, but is also starting to be a problem in metropolitan areas.

Most National Health Boards have recognised the problems arising when the PC requirement is no longer being met. In some countries, special support programs have been established to increase the number of young physicians specialising in PC. In Germany, for example, health-insurance companies and regional physicians' associations (Kassenärztliche Vereinigungen) have financed PC residency posts since 1999, with the result that the qualification rate of PCPs went up by 17.9 percent [10] in the following years. Even so, not all of the posts available in this program are filled by young physicians. Reasons for the waning interest in PC are reported in several studies [9, 11]. As is known, economic incentives are a driving force in students' choice of careers [12]. Disadvantageously, the reimbursement gap between generalists and specialists is steadily widening in the competition-based health-care systems of Western countries (*inter alia* [13]). Besides the economic reasons, the incompatibility of PC with the young physicians' lifestyle expectations [12, 14, 15], or its failure to provide sufficient intellectual stimulation to sustain their interest are explanations frequently given by young physicians for a lack of interest in primary care [11]. An additional possibility, albeit a paradoxical one, is that the decline is due in part to the efforts by medical schools to increase students' exposure to primary care practice [16]. During their internship in a PC facility, students seem to value the insight gained

into the challenge of caring for patients with a wide range of conditions, including serious chronic diseases. But they also see another aspect of PC medicine as they rotate through the inpatient clerkships. They once again observe elderly patients with chronic and multiple diseases, many of whom have been hospitalised because of inadequate or inappropriate outpatient treatment by their PCPs. These experiences may discourage young physicians from pursuing a career in PC medicine, owing to the concern that they will not be adequately prepared to meet the responsibilities of such a practice [11].

PCPs involved in medical education serve as role models. If trainees observe signs of burnout in their teachers in dealing with the high workload and various administrative demands of a private practice, this might well discourage them from becoming PCPs [17].

Prospective studies on the change in career paths from medical school through residency are lacking. In state-administered health-care systems there are competitively acquired residency posts and structured programs for specialty qualification, including PC. As a result, residents cannot easily change the specialty in which they want to qualify. In Switzerland, such programs exist for highly specialised medical fields (such as neurosurgery or ophthalmology) but not for PC. Furthermore, there are few studies investigating socio-demographic characteristics and personality traits of future PCPs as compared to other specialists. Moreover, differences between female and male PC residents are rarely described. Most of the studies are cross-sectional, with the result that analyses of predictive factors for choosing either to become a PCP or a specialist in another medical field are not described.

To investigate specialty-qualification trends and career paths of young physicians in Switzerland, we followed up a cohort of medical-school graduates of the universities of Basel, Bern, and Zurich starting in 2001. Main issues of the present paper are the following: what is the percentage of graduates/junior physicians wishing to specialise in PC? Is this aspired-to career goal followed continuously, and is there an increased trend towards or a shift away from PC during residency? What are the differences in terms of socio-demographic and personality characteristics between future generalists and specialists? Furthermore, are there differences in personality factors between female and male PCPs? Can predictive factors for physicians choosing PC or other medical specialties be identified?

## Methods

### Definition of the term “primary care”

In most Western countries, the terms “primary care”, “general medicine” or “family medicine” are used synonymously for doctors specialised for fundamental patient health care. In the present study we assigned all residents to the category “primary care” who decided to embrace “Facharzt für Allgemeinmedizin”. We did not include residents who wanted to specialise in internal medicine or paediatrics in the category of primary care physicians. At this point of their career, residents in internal medicine or paediatrics have not yet decided whether they will work as ‘Hausärzte’, as internal medicine specialists, or as hospital consultants, in the future.

### Study design, sample development, and study sample

The study is an ongoing *prospective survey of a cohort of graduates* of the three medical schools in German-speaking Switzerland, beginning in 2001 (T<sub>1</sub>). (Details of the study design and sample recruitment are described in a previous issue of this journal [18]). Subjects were re-evaluated after two years in 2003 (T<sub>2</sub>) and after four years in 2005 (T<sub>3</sub>) via a postal questionnaire. By then, they had worked in hospital as doctors for about one year (T<sub>2</sub>) or three years (T<sub>3</sub>). Table 1 shows the *sample development* from recruitment at T<sub>0</sub> (questionnaires sent to all registered graduates at the medical schools of Basel, Bern, and Zurich), to the start of the study at T<sub>1</sub>, to the second (T<sub>2</sub>) and third (T<sub>3</sub>) assessment for participants, as well as the number of non-participants and dropouts. There are no significant differences between the dropouts (T<sub>1</sub>–T<sub>3</sub>) and the subjects participating at the three measurements in terms of socio-demographic data, personality traits, and career-related variables at T<sub>1</sub>. Of the 515 subjects involved at T<sub>3</sub>, 445 (86.4%) participated in all three measurements, 70 individuals took part at T<sub>1</sub> and T<sub>3</sub>, but not at T<sub>2</sub>. This paper presents the data of the first (T<sub>1</sub>) and third (T<sub>3</sub>) assessments. To investigate the issues of this paper, 515 participants (277 (53.8%) females, 238 (46.2%) males) were included in the analyses.

### Instruments

The main characteristics of the applied instruments are given in table 2. All instruments are self-assessment scales.

The following are instruments whose constructs were quantified in the analyses:

- Questions concerning socio-demographic data and choice of medical specialty.

- *Sense of Coherence Scale, SOC-13* [19], is a measure of a person’s resistance to stress and his/her ability to manage stress.
- *Rosenberg-Self-Esteem-Scale RSE* [20] assesses general self-esteem and includes items that express a general favourable or unfavourable attitude towards oneself.
- *Personal Attributes Questionnaire, GE-PAQ*, German Extended Personal Attributes Questionnaire [21] is a self-rating instrument for the assessment of gender-role orientation. The Instrumentality (PAQ-I) scale contains instrumental, agentic traits (eg, “independent”) that are considered to be socially desirable to some degree in both sexes but stereotypically more characteristic of males. The Expressiveness (PAQ-E) scale contains so-called ‘feminine’ items that describe socially desirable expressive, communal traits (eg, “helpful”) that are stereotypically more characteristic of females.
- *Occupational Self-Efficacy Expectation Questionnaire* (Fragebogen zu beruflichen Selbstwirksamkeitserwartungen (BSW) [22]: The BSW questionnaire is a measure of a person’s general occupational self-efficacy expectations. Three items address motivational or competence aspects and these 3 items are inversely formulated to high occupational self-efficacy expectations.
- *Career Motivation Questionnaire CMQ* [23] consists of 3 scales: *Intrinsic Career Motivation CMQ-I* (ie, enjoyment of and interest in professional activities), *Extrinsic Career Motivation CMQ-E* (ie, striving for promotion, income, prestige) and *Extraprofessional Concerns CMQ-EC* (ie, setting family, convenient working hours, job security as priorities).
- *Effort-Reward Imbalance at Work Questionnaire ERI* (Fragebogen zu beruflichen Gratifikationskrisen) [24]: the items of the *effort* scale measure an intrinsic (personal, coping-related) component of stressful experience at work, whilst the items of the *reward* scale measure an extrinsic (perceived work situation) component. The effort/reward quotient is a measure of the imbalance between these two components.
- The *Over-commitment* scale [24] focuses on an excessive effort at work as evidenced by the respondent’s inability to withdraw from work obligations and develop a more distanced attitude towards job requirements.
- *GOALS* (Ein Fragebogen zur Messung von Lebenszielen) [25] assesses 24 general, long-term life goals pertaining to six major life domains: *intimacy* (close relationships based on mutual trust and affection), *affiliation* (spending time with other people, common

**Table 1**  
Sample development of the study sample.

	Sample addressed T <sub>0</sub> (2001)	Non- participants	Study sample T <sub>1</sub> (2001)	Drop- outs T <sub>1</sub> –T <sub>2</sub>	Study sample T <sub>2</sub> (2003)	Drop- outs T <sub>1</sub> –T <sub>3</sub>	Study sample T <sub>3</sub> (2005)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Gender</b>							
female	487 (49)	107 (38)	380 (53)	97 (49)	283 (54)	103 (51)	277 (54)
male	517 (51)	178 (62)	339 (47)	100 (51)	239 (46)	101 (49)	238 (46)
<b>Age in years</b>							
mean			27.4	27.6	29.3	31.5	31.3
range			23–44	23–44	26–44	29–48	27–46
Total	<b>1004</b>	285	<b>719</b>	197	<b>522</b>	204	<b>515</b>
<b>Study sample</b>			<b>719</b>		<b>522</b>		<b>515</b>
			(100%)		(73% of 719)		(72% of 719)
			(72% of 1004)		(52% of 1004)		(51% of 1004)

activities), *altruism* (acting for the welfare of others), *power* (asserting oneself, seeking social status), *achievement* (improving on one's self, meeting standards), and *variation* (seeking new experiences and excitement). Each goal is rated in regard to the *importance* (How important is it for you to reach this goal in your lifetime?). Importance ratings indicate which goals are desirable and valuable for the person and indicate the strength of his/her commitment to a goal.

### Statistical analyses

All statistical analyses were carried out with SPSS 12.0. Descriptive statistics are given in terms of counts and percentages, means and  $\Delta_{crit}$  (for estimation of CI 95%) respectively. Differences in socio-demographic data between future generalists and specialists were analysed with chi-squared-tests. Differences in personality and career-related characteristics as well as the importance of life goals were investigated by multivariate analyses of covariance (covariates: gender and age) naming Wilk's lambda and eta-squared for effect size. The prediction of the decision to embrace primary care versus other specialties taking account of the importance of career-related factors was analysed by multiple logistic regression analysis.

## Results

### Primary care as a career goal

At the third assessment ( $T_3$ ), 81 of the 515 study participants had not yet decided on the medical field in which they would specialise, while 434 subjects had already made this decision. Of the latter, 42 individuals (9.7%) – 24 females (57%) and 18 males (43%) – aspired to become PCPs. The percentage of subjects with PC as a career goal at  $T_3$  did not differ apparently according to the university graduated from: Basel  $n = 10$  (8.6%) of 116 residents, Bern  $n = 15$  (11.6%) of 129 residents, Zurich  $n = 17$  (9.0%) of 189 residents ( $T_3$ ).

At  $T_1$ , when students were in their last year of medical school, 407 of the 719 initial study participants had already decided on their specialty qualification. PC was mentioned by  $n = 14$  (12.2%) of 115 Basel students,  $n = 15$  (14.9%) of 101 Bern students, and  $n = 22$  (11.5%) of 191 Zurich students, with no significant differences among the three medical schools.

As seen in the top part of Table 3, at all three assessments ( $T_1$ ,  $T_2$ , and  $T_3$ ), 12 subjects consistently mentioned PC as their career goal; 30 decided on PC between  $T_1$  and  $T_3$ , 8 of them

**Table 2**

Characteristics of the applied instruments.

Dimensions and scales	Number of items	Method of item scoring (Likert-scales)	Method of scale scoring	Reference value (mean) female	Reference value (mean) male	Reliability	Reliability in this study
<b>Personality factors (<math>T_1</math>)</b>							
Sense of coherence (SOC)	13	1 (low) – 7 (high)	Sum score divided by number of items	4.96	5.18	0.85	0.84
Rosenberg Self-esteem	10	1 (low) – 4 (high)	Sum score divided by number of items	2.23	2.31	0.88	0.85
PAQ Instrumentality	8	1 (low) – 6 (high)	Sum score divided by number of items	3.50	3.75	0.72	0.74
PAQ Expressiveness	8	1 (low) – 6 (high)	Sum score divided by number of items	4.63	4.38	0.75	0.74
<b>Career-related factors (<math>T_3</math>)</b>							
CMQ Intrinsic	8	1 (low) – 7 (high)	Sum score divided by number of items	5.96		0.70	0.68
CMQ Extrinsic	8	1 (low) – 7 (high)	Sum score divided by number of items	4.17		0.76	0.69
CMQ Extraprofessional concerns	8	1 (low) – 7 (high)	Sum score divided by number of items	4.30		0.72	0.74
Occupational Self-Efficacy Expectation	6	1 (low) – 5 (high)	Sum score divided by number of items	3.76		0.78	0.75
Effort	6	1 (low) – 5 (high)	Sum score	12.34		0.71	0.74
Reward	11	1 (low) – 5 (high)	Sum score	47.84		0.84	0.79
Overcommitment	6	1 (low) – 4 (high)	Sum score divided by number of items	2.22		0.76	0.74
<b>Importance of life goals (<math>T_3</math>)</b>							
Intimacy	4	1 (low) – 5 (high)	Sum score divided by number of items	4.60		0.60	0.76
Affiliation	4	1 (low) – 5 (high)	Sum score divided by number of items	3.47		0.82	0.85
Altruism	4	1 (low) – 5 (high)	Sum score divided by number of items	3.55		0.76	0.82
Power	4	1 (low) – 5 (high)	Sum score divided by number of items	2.73		0.85	0.83
Achievement	4	1 (low) – 5 (high)	Sum score divided by number of items	4.00		0.68	0.75
Variation	4	1 (low) – 5 (high)	Sum score divided by number of items	3.33		0.81	0.76

switched away from other specialties to PC. The bottom part of table 3 shows a change from PC to another specialty between T<sub>1</sub> and T<sub>3</sub> in the case of 19 subjects. In conclusion, the specialty-choice data indicate a switch of 30 subjects to PC, but also

**Table 3**

Decision to specialise in primary care (PC) at the three measurements.

Residents who decided to embrace primary care			
T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	n
PC	PC	PC	12
PC	Other specialty	PC	1
PC	Undecided	PC	4
PC	Not participating	PC	2
Other specialty	PC	PC	3
Other specialty	Other specialty	PC	3
Other specialty	Undecided	PC	1
Other specialty	Not participating	PC	1
Undecided	PC	PC	6
Undecided	Other specialty	PC	0
Undecided	Undecided	PC	6
Undecided	Not participating	PC	3
Total			42
Residents who shifted away from primary care			
T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	n
PC	PC	Other specialty	3
PC	Other specialty	Other specialty	4
PC	Undecided	Other specialty	5
PC	Not participating	Other specialty	4
Other specialty	PC	Other specialty	2
Undecided	PC	Other specialty	1
Total			19

**Table 4**

Socio-demographic characteristics of physicians aspiring to primary care and other specialties respectively.

	Primary care (n = 42) n (%)	Other specialty (n = 392) n (%)	p
<b>Gender</b>			
Female	24 (57)	206 (53)	.344
Male	18 (43)	186 (47)	
<b>Age</b>	mean = 32.1 range 29–43	mean = 31.2 range 27–46	.139
<b>Current living situation</b>			
married	16 (39)	88 (22)	.006
partnership	31 (76)	325 (83)	.170
partner's educational level (academic)	11 (36)	209 (65)	.001
partner is a physician	4 (13)	123 (38)	.003
children	13 (31)	38 (10)	<.001
<b>Family background</b>			
mother's education (academic)	4 (10)	54 (14)	.308
father's education (academic)	16 (38)	172 (44)	.291
mother is a physician	0 (0)	12 (3)	.209
father is a physician	3 (7)	61 (16)	.103
provenance from a rural area	18 (43)	159 (41)	.448

a drain of 19 from PC to other specialties during the first three years of residency.

*Socio-demographic characteristics of future primary care physicians and other specialists*

As seen in table 4, future PCPs (T<sub>3</sub>, n = 42) differed significantly from physicians choosing other specialties insofar as they were more often married, more often had children, and less often had partners who were academics or doctors. There were no significant differences in terms of gender distribution, age, and family background.

*Differences between primary care physicians and other specialists in terms of personality traits, career-related factors, and life goals*

Table 5 presents the results of the three multivariate analyses of variance for the three dimensions personality factors (assessed at T<sub>1</sub>), career-related factors (T<sub>3</sub>), and importance of life goals (T<sub>3</sub>). Significant differences between future PCPs and physicians choosing other specialties were found in all three dimensions. Within the dimension *personality factors* future PCPs differed from those choosing other specialties mainly in terms of *lower scores in instrumentality*, ie, they assessed themselves as less agentic-orientated, less self-assertive, less independent, less competitive, and less decisive. There were also differences between the two groups in terms of career-related factors: PCPs mainly showed *lower extrinsic career motivation* (ie, promotion, income, and prestige were not so important for them) and *higher extraprofessional concerns* (ie, they prioritised family, convenient working hours, job security, and leisure time). Differences were also observed in terms of the importance of life goals: *power* (ie, professional influence, asserting oneself, seeking social status), *achievement* (improving oneself, meeting standards), and *affiliation* (spending time with other people, common activities) were *less important* to future PCPs.

*Differences between female and male future primary care physicians in terms of personality traits, career-related factors, and life goals*

As seen in table 6, the multivariate analyses did not reveal significant differences between female and male PCPs, probably because of small sample sizes: for *career-related factors*, women showed lower *extrinsic career motivation* and higher *extraprofessional concerns*, indicating less career orientation and the prioritising of personal life factors. Furthermore, women experienced a higher *effort-reward imbalance*, ie, had to cope with a high amount of work-related stress with fewer rewards received by their professional team in compensation.

*Important factors for choosing primary care at T<sub>3</sub>*

At the first assessment (T<sub>1</sub>), carried out in the participants' last year of medical school, students were asked which factors were important for their later work as doctors. The items of a questionnaire

consisting of ten reasons for choosing a particular specialty were answered with 'yes' or 'no'. The predictive value of responses regarding the choice of primary care or other specialties were analysed by multiple logistic regression analysis. As seen in table 7, three factors showed significant odds ra-

tios: short time for completing specialisation and low investment for private practice were significantly important reasons for choosing PC. The manageability of a medical specialty was a significant reason for not choosing PC.

## Discussion

This paper reports on the data gathered from a prospective survey of residents graduating from the three medical schools in the German-speaking part of Switzerland from 2001 onwards. Subjects were evaluated three times in a two-year interval (T<sub>1</sub>, last year at medical school; T<sub>2</sub>, after one year of residency; T<sub>3</sub>, after three years' residency). The paper focuses on residents' career goals in terms of whether they aspire to become primary care physicians (PCPs) or to qualify in other medical specialties.

Of n = 515 (total sample) third-year residents, 81 had not yet decided on a specialty, while 434 had decided on the medical field in which they wished to specialise. Of the latter, only 42 (9.7%) aspired to become PCPs. Although special one-to-one tu-

torials in private practice have been offered in years 3 and 4 of the Basel medical school since 1997 [26, 27], Basel did not have more junior physicians pursuing a career in primary care than Bern and Zurich, either immediately after graduation (T<sub>1</sub>) or after three years of residency (T<sub>3</sub>). These results indicate that specific exposure to primary care issues during medical school is important, but does not play a decisive role – under the given circumstances – in influencing graduates to become primary care physicians. We must therefore assume that experiences during the early years of residency have more impact on specialty choice. This is also attested to by the fact that 30 residents switched to and 19 away from primary care during the first three years of residency. This number is nowhere

**Table 5**

Means and Delta<sub>crit</sub><sup>1</sup> of personality and career-related factors, and importance of life goals in primary care and other specialties. Results of multivariate analysis of covariance (covariates: gender, age) (n = 434).

Dimensions and scales	Choice of specialty (T <sub>3</sub> )		Wilk's Lamda	Multivariate statistics		
	Primary Care (n = 42) Mean ± SE × 1.96 <sup>1</sup>	Other specialties (n = 392) Mean ± SE × 1.96 <sup>1</sup>		F(df <sub>effects</sub> ,df <sub>error</sub> )	p	Partial eta-squared
<b>Personality factors (T<sub>1</sub>)</b>			0.97	F(4,429) = 3.07	0.02	0.03
Sense of coherence (SOC)	5.0 ± 0.24	5.1 ± .08				
Rosenberg Self-esteem	2.4 ± 0.12	2.4 ± .04				
PAQ Instrumentality	4.0 ± 0.20	4.3 ± .06				
PAQ Expressiveness	4.9 ± 0.13	4.9 ± .05				
<b>Career-related factors (T<sub>3</sub>)</b>			0.94	F(8,423) = 3.46	<0.01	0.06
CMQ Intrinsic	6.0 ± 0.14	6.1 ± 0.05				
CMQ Extrinsic	3.8 ± 0.26	4.3 ± 0.08				
CMQ Extraprofessional concerns	4.8 ± 0.29	4.2 ± 0.10				
Occupational Self-Efficacy Expectation	3.7 ± 0.20	3.8 ± 0.06				
Effort	15.8 ± 1.33	14.8 ± 0.40				
Reward	43.0 ± 2.26	44.0 ± 0.66				
Effort-Reward Imbalance	0.9 ± 0.10	0.8 ± 0.03				
Over-commitment	2.2 ± 0.17	2.2 ± 0.05				
<b>Importance of life goals (T<sub>3</sub>)</b>			0.93	F(6,427) = 5.65	<0.001	0.07
Intimacy	4.6 ± 0.10	4.6 ± 0.04				
Affiliation	3.4 ± 0.22	3.6 ± 0.07				
Altruism	3.7 ± 0.20	3.7 ± 0.06				
Power	2.5 ± 0.20	2.8 ± 0.07				
Achievement	4.0 ± 0.16	4.3 ± 0.05				
Variation	3.8 ± 0.20	3.7 ± 0.07				

<sup>1</sup> standard error of means (SE) × 1.96: estimate for CI (95%); T<sub>1</sub> time before graduation; T<sub>3</sub> time after three years of residency; PAQ Personal Attributes Questionnaire; CMQ Career Motivation Questionnaire

**Table 6**

Means and Delta<sub>crit</sub><sup>1</sup> of personality and career-related factors, and importance of life goals in primary care and other specialties. Results of multivariate analysis of covariance (covariate: age) (n = 42).

Dimensions and scales	Choice of specialty (T <sub>3</sub> )		Multivariate statistics			
	Primary Care (n = 24) Mean ± SE × 1.96 <sup>1</sup>	Other specialties (n = 18) Mean ± SE × 1.96 <sup>1</sup>	Wilk's Lamda	F(df <sub>effects</sub> ,df <sub>error</sub> )	p	Partial eta-squared
<b>Personality factors (T<sub>1</sub>)</b>			0.98	F(4,37) = 0.16	0.96	0.02
Sense of coherence (SOC)	5.0 ± 0.32	5.1 ± 0.32				
Rosenberg Self-esteem	2.4 ± 0.14	2.5 ± 0.21				
PAQ Instrumentality	4.0 ± 0.32	4.1 ± 0.19				
PAQ Expressiveness	4.9 ± 0.17	4.9 ± 0.20				
<b>Career-related factors (T<sub>3</sub>)</b>			0.65	F(8,33) = 2.18	0.06	0.35
CMQ Intrinsic	6.0 ± 0.18	6.0 ± 0.25				
CMQ Extrinsic	3.3 ± 0.28	4.3 ± 0.33				
CMQ Extraprofessional concerns	5.0 ± 0.40	4.6 ± 0.41				
Occupational Self-Efficacy Expectation	3.5 ± 0.24	3.9 ± 0.27				
Effort	17.0 ± 1.62	14.2 ± 1.84				
Reward	42.3 ± 2.81	43.9 ± 3.42				
Effort-Reward Imbalance	0.9 ± 0.14	0.7 ± 0.10				
Over-commitment	2.2 ± 0.20	2.1 ± 0.28				
<b>Importance of Life goals (T<sub>3</sub>)</b>			0.78	F(6,35) = 1.67	0.16	0.22
Intimacy	4.7 ± 0.12	4.6 ± 0.16				
Affiliation	3.6 ± 0.30	3.2 ± 0.28				
Altruism	3.7 ± 0.24	3.7 ± 0.37				
Power	2.3 ± 0.24	2.6 ± 0.32				
Achievement	4.0 ± 0.21	4.0 ± 0.26				
Variation	3.8 ± 0.28	3.7 ± 0.32				

<sup>1</sup> standard error of means (SE) × 1.96: estimate for CI (95%); T<sub>1</sub> time before graduation; T<sub>3</sub> time after three years of residency; PAQ Personal Attributes Questionnaire; CMQ Career Motivation Questionnaire

**Table 7**

Prediction of the choice of primary care versus other specialties (T<sub>3</sub>) taking account of the importance of career-related factors (T<sub>1</sub>) (multiple logistic regression, method: enter).

How important are the following factors in your choice of specialty? (1 = yes, 0 = no)	OR	CI (95%)
Versatility of the specialty	0.40	0.08–2.14
Work with patients	4.83	0.62–37.61
Compatibility with family responsibilities	3.11	0.70–13.83
Manageability of the specialty	0.33	0.16–0.69
Later professional independence / autonomy	1.52	0.67–3.44
Short time for completing specialisation	2.49	1.18–5.26
High income	0.57	0.21–1.51
Low investments for private practice	2.32	1.08–5.50
High prestige	0.99	0.35–2.81
Later takeover of relative's private practice	1.32	0.26–6.60

T<sub>1</sub> time before graduation; T<sub>3</sub> time after three years of residency

near enough to meet the need for PCPs in Switzerland in the coming years [5]. To ensure future basic health care for the population, residency conditions for PC and incentives for becoming a PCP should be improved as a matter of urgency. In ongoing assessments of our Swiss physicians development study [18, 28, 29] we will address in greater detail the issue of how PC can be made more at-

tractive for young physicians. It must be concluded that primary care is not currently considered to be an attractive career goal; otherwise, more than 9.7% of a cohort would want to become general practitioners.

*Socio-demographic characteristics of future primary care physicians versus other specialists*

On the whole, the current life situations of the 42 subjects of our study pursuing future careers as PCPs differed from those of subjects pursuing other specialties. Future primary care physicians seemed to set *extraprofessional concerns*, such as having time with family, leisure time, and time outside work as priorities; their partners have a lower educational level, and are less often physicians. The assumption that these young physicians still have a more traditional image of the doctor's role could not be confirmed. The parents' role model or provenance from a rural area did not seem to influence the career goal of PC. In a Canadian study [30], students who identified PC as their first choice tended to be older, to be concerned about medical lifestyle, and to have been living in smaller communities at the time of graduation from high school. Moreover, they were more likely to demonstrate social concerns and to desire variety and breadth in their practice.

*Personality, career orientation, and life goals in generalists versus specialists*

To our knowledge, the literature contains few data on differences in personality traits and specialty choice. At T<sub>1</sub>, PC residents in our study had lower scores in instrumentality than residents aspiring to other medical specialties, ie, they were revealed to be less agentic-oriented, less competitive, and less self-assertive. Abele [31] and Sieverding (personal communication) reported that instrumentality was an important predictor for prestigious career goals and career achievement. Not surprisingly, the PCPs of our study showed less career-orientation, also seen in their lower *extrinsic career motivation* (factors concerning career promotion, later income and prestige). They prioritised *extraprofessional concerns* such as having time for the family, convenient working hours, leisure time, and job security. This result is surprising, as PC is rated as a specialty with uncontrollable working conditions in several studies [12, 15]. The specialty-related lifestyle, defined as more leisure time, enjoying life outside work, predictable working hours, activities outside work, and more time with the family, has been proved to have an important influence on the career choices of medical students [12, 14, 32]. The desire for a controllable lifestyle was strongly associated with the recent trends in specialty choice for both women and men. The declining percentage of students and residents choosing PC as a career goal may be explained in part by the less attractive lifestyle PC physicians are saddled with when they run their own practices. In order for PC to become more attractive – especially for female physicians – the expectations of the role of the PCP must change. Rather than letting patients' needs dictate the lifestyle and work-life balance of PCPs, young PCPs wish to define these conditions themselves, in the same way their colleagues in other specialties do.

In terms of the importance of *life goals*, there were again differences between PC residents and specialists. As expected, physicians with PC as a career goal scored lower in *power* and *achievement* – in other words, they were not as concerned with social status or with achieving certain career and living standards as future specialists were. Furthermore, the PC aspirants showed lower values in *affiliation* – a measure of the importance of spending time with others or joining in common activities. Although PCPs must be able to communicate well with many, and very different patients, and be socially concerned, they would seem to be less sociable than their colleagues who aspire to become medical specialists. Most of the published studies, only present one aspect influencing career choice; as a result, our findings cannot easily be compared with data from other studies.

With regard to the above-mentioned characteristics, we found few, but not significant – probably due to small sample sizes – gender-related differences among individuals aspiring to become PCPs. Women were less extrinsically oriented

than men in terms of career motivation, and extraprofessional concerns played a more important role for them. These results match earlier findings of our study [18, 33], in which female medical students and residents scored significantly lower in these two dimensions than their male colleagues, regardless of career choice.

*Prediction of specialty choice*

The question was raised as to whether there are predictive factors for the likelihood of choosing either primary care or another specialty. In our study, students who at the first assessment (T<sub>1</sub>) rated the *manageability* of a medical specialty as an important factor in their choice of specialty were less likely to decide on PC at T<sub>3</sub>. *Short time for completing specialisation* and *low investments for private practice* (T<sub>1</sub>), however, were considered to be important factors in choosing primary care (T<sub>3</sub>). An Australian study [34] found similar results. Considering these three predictive factors in which the two groups – generalists and specialists – differ, there are no attractive reasons for choosing primary care. What conclusion can be drawn from this result? The attributes, which in the past made the PC profession attractive and worth aspiring to have lost their validity. At present, PC would seem to be a medical specialty with a lot of minus points, and lacking in appeal. Primary care must be able to offer its own distinct and attractive aspects when compared with other specialties.

There are some limitations in this study. It must be borne in mind that the replies of the respondents reflect the career goals they aspire to at the end of their third year of residency, and it is possible that they may yet change their choice of specialty either to or away from PC in the coming years. We will continue the prospective study, which will enable us to follow the residents until after they qualify in their specialty. Another uncertainty is that we do not yet know how many of the residents specialising in internal medicine will enter general medical practice later on.

*Conclusion*

The trend away from PC to other specialties is noticeable in Switzerland as well as in many other Western countries, and is even greater in competition-based health-care systems than in state-administered ones. If nothing changes, there will be a significant shortage of PCPs in the near future. Looking at the demographic trend of the population, the number of older, poly-morbid and chronically ill patients will increase. Such people need a medical coordinator, ie, an optimally qualified PCP, rather than a specialist for each individual illness. This is also important from the point of view of cost containment within the health-care system.

The efforts made to incorporate primary care issues into medical school curricula are essential steps, but will remain ineffective if no further-education supporting activities are established.



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