

Students' conceptions of the medical profession; an interview study

M.G.H. NIEUWHOF¹ (†), J.J.D.J.M. RADEMAKERS¹, M.M. KUYVENHOVEN²,
M.B.M. SOETHOUT³ & TH.J. TEN CATE¹

¹University Medical Center Utrecht, School of Medical Sciences, Utrecht, The Netherlands;

²University Medical Center Utrecht, Julius Center for Health Sciences and Primary Care,

Utrecht, The Netherlands; ³Free University Medical Center Amsterdam, Department of Public Health, Amsterdam, The Netherlands

SUMMARY *Students' beliefs and attitudes towards the medical profession have been studied in relation to career choices, but most research has been restricted to either predetermined aspects or to a limited number of specialities. This study aimed at getting unprompted insight in the students' perceptions of their future profession in dimensions that may be determinants of study success and career choice. Undergraduate and graduated medical students were interviewed and asked to characterize the medical profession in general and four contrasting specialities in particular. Grounded Theory methodology was used to analyse the data. Participants were medical students at the start of their training (n = 16), during clerkships (n = 10) and after graduation (n = 37). Beginning students perceive the medical profession in limited dimensions: the activities of a physician, their relationship to patients and the physician's knowledge, skills and personality. They do not see many differences between specialities, in contrast with students with clinical experience and graduate students. Undergraduate students' perception is focussed more on social aspects of the profession compared to graduates.*

Introduction

Students' perceptions of the medical profession have been studied in relation to their career choices, but most research has been restricted to either a limited number of aspects of the medical profession or to a limited number of specialities. Perceptions of income, prestige and life styles of different medical specialities have been studied (Paiva & Haley, 1971; Fishman & Zimet, 1972; Kiker & Zeh, 1998; Reed *et al.*, 2001), but the perceived nature of patient relationships, the degree of specialization and the scientific character of the medical profession have only been studied in relation to primary care specialities and psychiatry (Pruessner *et al.*, 1992; Gorenflo *et al.*, 1994; Bland *et al.*, 1995; Grayson *et al.*, 1996; Meurer *et al.*, 1996; Pomey *et al.*, 1997; Lynch *et al.*, 1998; Newton *et al.*, 1998; Grayson *et al.*, 2001; Brooks *et al.*, 2002). Most studies find that undergraduate students have little insight into medical specialities. Savickas *et al.* (1986), studying the difficulties of first to fourth year students when they think of career choice, found that all students cited lack of information about specialty areas. Underwood *et al.* (1990) also found significant gaps in knowledge of first-year medical students regarding their future working conditions, as 'on-call' duties, pay rate and career structure. Furnham (1986), however, found that

preclinical students have strong beliefs about some characteristics of medical specialities, such as the scientific credibility, the kind of patient relationships, the kind of thinking used by the specialist (fuzzy thinker or not), the effectiveness of the specialty or the extent to which the specialty is intellectually demanding. To their surprise even students with only casual acquaintance with specialities tended to have relative complex and coherent beliefs about these specialities.

The aim of our study was to get insight in the perceptions of medical students about their future profession and to find dimensions in which these perceptions could be categorized, i.e. professional activities, relationships with patients, required skills and knowledge, working conditions, prestige, etc. We expected that students who are more acquainted with the profession perceive more dimensions compared to those with no or little acquaintance.

Students' conception of the medical profession may be related to their study success and career choice, which can be investigated in future (quantitative) research. The nature of this 'content conception' may determine the amount of guidance student need in education (Ten Cate *et al.*, 2004).

Design and methods

The study was designed as a qualitative study using structured interviews with groups and individuals, analysed with Grounded Theory methodology (Strauss & Corbin, 1990).

Subjects and educational setting

Students ($n = 63$) were interviewed at three different stages of the medical training: at the start of the medical curriculum (1st year) ($n = 16$, six male, ten female), during the clerkships (5th year) ($n = 10$, six male, four female) and after graduation ($n = 37$, 13 male, 24 female). The graduate students were first to third year residents of General Practice (seven female, six male), Youth Health Physicians

Correspondence: Dr J.J.D.J.M. Rademakers, UMC Utrecht – School of Medical Sciences, Center for Research and Development of Education, PO Box 85500 (HP HB 4.05), 3508 GA Utrecht, The Netherlands. Tel: 31 302 503 471; fax: 31 302 503 481; email: j.rademakers@umcutrecht.nl

(13 female), Internal Medicine (two female, three male) and Surgery (two female, four male).

All participants were studying or had been studying either at the University Medical Center Utrecht or at the VU University Medical Center in Amsterdam.

Interviews

Focus groups were established with undergraduate students, with general practice and with youth health residents. The participants in each of these groups were asked to first write down individually as many aspects as possible of the medical profession in general and of four medical specialties (General Practitioner, Youth Health Physician, Internist and Surgeon) in particular. The study focused on specialties with direct patient care, particularly these four specialties which together cover various aspects of the medical profession, such as clinical and non-clinical working situations, emphasis on screening, diagnosing, treatment, prevention or management activities, differences in patient contacts or differences in prestige and income. To generate responses the participants were also asked to write down perceived similarities and differences of the four specialties. It was stressed that their perceptions of *actual* qualities of these professions were asked for, not the qualities they thought were *desired*. The answers were discussed within the group to clarify them for the researcher and then handed in.

The internal medicine and surgery residents were interviewed by telephone. One week before the telephone interview they were sent a postal questionnaire. To stimulate clear responses in a short interview the interviewees were asked to mention three attractive and three unattractive qualities of the general practitioner, the youth health physician, the internist and the surgeon. During the interview the given answers were summarized and written down by the interviewer.

Data analysis

The written answers of the interviewees and the telephone notes were used for data analyses. The data analyses were guided by Grounded Theory methodology (Strauss & Corbin, 1990). A coding framework of categories and sub-categories was developed, using both insights obtained from the interview data and interpretation. As Grounded Theory indicates, an iterative process was followed. Interviews were re-examined by three of the authors until they agreed upon the coding framework.

The answers of the interviewees were split into parts (episodes), each consisting of one unit of information. In this way, 218 episodes from first-year students were obtained, 166 from fifth-year students, 292 from GP and youth health residents and 204 from residents of internal medicine and surgery. Subsequently, each episode was coded, allowing just one code per episode. Coding was done independently by two judges. Differences in coding were discussed until agreement was reached or by persisting disagreement, coded as 'not classified'. To discover major themes in the description given by the interviewees the percentage of episodes fitting in one subcategory of all episodes made by a specific group of interviewees was calculated. It should be noted that the unit of analysis was an episode and not

a person. Only themes mentioned by two or more interviewees of a specific group were used.

Results

Coding framework

The responses of the interviewees could be divided into three main categories: 'Content of the work', 'Physician characteristics' and 'Working conditions'. Each category could be further subdivided (Table 1). Episodes of the first category ('Content of the work') describe activities of the physician, the aim of these activities and features of the patients. The second category ('Physician characteristics') regards the type of knowledge, skills and personality of this physician. Category three ('Working conditions') contains four subcategories: the type of organization to which the physician is connected, co-operation with colleagues and other health care workers, merits, and the working hours in this profession. Of all episodes, 95.7% could be classified within one of the main categories.

Main categories

Residents more often refer to the content of the work (66% of all episodes) than first- and fifth-year students (48% and 57%) (Figure 1). Clinical residents (INT/SUR) and students during their clerkships also frequently mention working conditions, especially the large number of hours made by the physician in hospital (clinical residents 29% and fifth year students 16% of the episodes).

First-year students differ from the other groups in the large number of episodes concerning physician characteristics (42% of all episodes), while only 5% of the episodes of clinical residents describe the knowledge, skills or personality of the physician. Non-clinical residents (GP/YHP) more frequently refer to this dimension, emphasizing the communication and management skills of the non-clinical physician.

Content of the work

Kind of activities. First-year students do not only refer to the category 'Content of the work' less often, their episodes also show less diversity than those from the other groups (Figure 2).

Ten percent of the first year students' episodes concern the kind of activities performed by the physician and there only 'talking with patients' and 'operating patients' were mentioned, often described as mutually exclusive:

'A surgeon operates, which is not done by the other specialists. He hardly talks to patients. In contrast a GP or Youth Health physician spends a lot of time communicating with patients. An internist also talks often with his patients' (first-year student).

Two students write that surgeons do not communicate with their patients, because they only meet 'sleeping' patients.

Fifth-year students mention more and different activities: paper work, teaching students or being taught themselves, however not 'talking with patients' and 'operating'.

Table 1. Coding framework with the main categories and subcategories and the distribution of remarks of the four groups of interviewees.

Main category	Students	Students	Residents	Residents
1st level subcategories	1st year	5th year	GP and YHP	INT and SUR
- 2nd level subcategories	<i>n</i> = 16	<i>n</i> = 10	<i>n</i> = 26	<i>n</i> = 11
Total	218	166	292	204
1. Content of the work	102	90	183	130
1a. Activities	50	33	72	18
Kind of activities	22	15	27	10
Aim of activities	28	18	45	8
1b. Work characteristics	37	44	93	101
Degree of specialization	1	6	11	12
Nature (do-think-talk)	2	12	1	17
Relationship to patients	24	11	45	11
Responsibility	0	4	1	9
Intellectual challenge	0	0	1	2
Other differences between specialities	10	11	34	50
1c. Patient problems	15	13	18	11
Type of illnesses	8	5	14	7
Diversity of illnesses	2	0	3	3
Complexity of illnesses	5	1	0	1
Other	0	7	1	0
2. Physician characteristics	89	42	69	10
2a. Knowledge	33	9	22	6
Kind of knowledge	16	6	12	2
Degree of specialization	17	3	10	4
2b. Skills	29	23	32	3
Medical	7	1	0	1
Social – communicative	18	16	17	0
Other skills	4	6	15	2
2c. Personality	27	10	15	1
3. Working conditions	20	25	33	58
3a. Organization	7	5	15	4
3b. Co-operation	6	6	7	20
With whom	6	4	6	9
Woman as colleagues	0	0	1	0
Atmosphere	0	2	0	11
3c. Merits	1	4	4	5
Income	1	2	0	4
Prestige	0	2	4	1
3d. Working time and pressure	6	10	6	29
Length of working day/'on call' duties	3	7	6	19
Stress	3	3	0	9
Part-time possibilities	0	0	0	1
4. Not classified within main categories	7	9	7	6

Clinical residents only seldom refer to different activities performed by the physician. Only the Youth Health residents mention activities that are unusual from the viewpoint of a clinical specialist, such as consulting schoolteachers, social workers or the police, co-ordinating large scale prevention projects or taking forensic duties.

Aim of activities. First and fifth-year students do not differ in their description of the aim of the activities of the physician: they refer in several episodes to 'helping or curing patients in general', 'discriminating between patients with medical of

psychological problems' and 'giving prevention advises'. About half of the episodes in this subcategory deal with the task of 'social and emotional guidance of patients during the illness'. Nine of 16 first-year students and seven of ten fifth-year students made statements of this kind.

'A physician helps people by curing them and comforting them. Especially a GP and a youth health physician (an internist also, but less) have a social function; they help patients with medical, social or psychological problems' (first-year student).

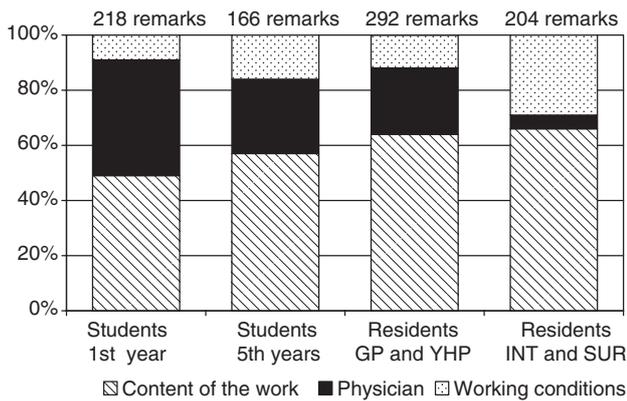


Figure 1. Distribution of episodes over the categories ‘Content of the work’, ‘Physician characteristics’ and ‘Working conditions’.

In contrast, only one of the interviewed residents mentions social-emotional guidance. They refer to other obligations, such as ‘making a correct diagnosis or treatment’, ‘giving information to patients’, ‘co-ordinating the medical care given to a patient’ or ‘designing plans and policies for different medical or non-medical platforms’.

Characteristics of the activities. When characterizing the differences between the medical specialties, first-year students only mention the differences in duration and nature of the patient contacts (relationship to patients: 11%):

‘Some medical doctors, such as a GP, know their patients for a long time and they are well acquainted with the family and the social circumstances, while specialists see their patients only once or twice’ (first-year student).

Fifth-year students and residents mention three other differences: the degree of specialization; the amount and kind of responsibility and the nature of the disciplines (‘acting’, ‘figuring out by thinking’ or ‘talking with patients’). Internal medicine and surgery residents often distinguish between the various medical specialties with regard to heroic and dynamic aspects, the heavy physical burden during operations and when ‘on call’, aggressive or demanding patients and the degree of standardisation of common procedures (Table 1, other differences between specialties: 25%).

‘The surgeon and the GP often have to act quickly, need improvisation talents and see quickly the results of their actions: their successes as well as their failures. In contrast, the internist only sees results after days, months or years; the work of the youth health physician seems very dull to me’ (surgical resident).

Patient problems. All groups mention about the same number and kind of episodes on patient problems (Figure 2, patient problems: 6–8% of all episodes), describing differences between specialties with regard to complexity and diversity of patient problems.

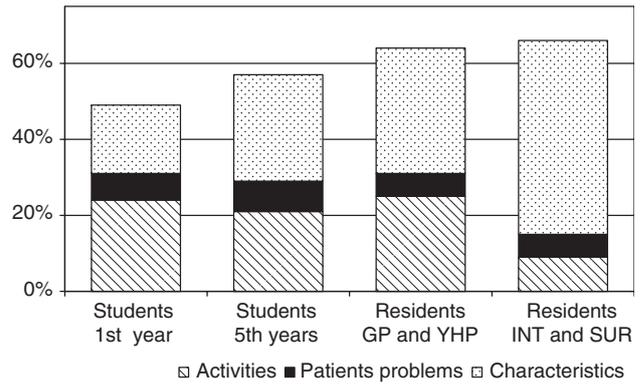


Figure 2. Distribution of episodes within ‘Content of the work’, as percentage of all episodes.

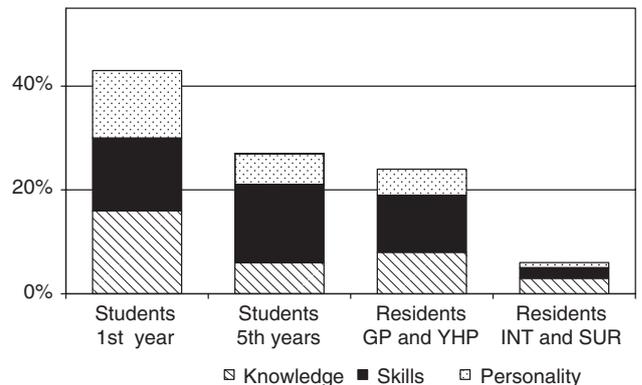


Figure 3. Distribution of episodes within ‘Physician characteristics’, as percentage of all episodes.

‘The GP meets patients with all kind of problems, different medical problems or social-psychological and he meets even patients with no problems at all’ (GP resident).

‘Because patients are sent to the hospital by the GP, the internist and surgeon see only a restricted range of patient problems. But physicians in the hospital see more complex problems’ (fifth-year student).

Physician characteristics

Knowledge and skills. First-year students often mention the knowledge and skills of the physician (30% of the episodes). Fifth year students and non-clinical residents mention these aspects in 21% and 19%, while clinical residents only seldom refer to these characteristics (5%).

All groups mention about the same kind of knowledge or skills needed by a physician: general and specialized knowledge of the functioning of the human body (especially anatomy and pathology are mentioned). First and fifth-year students and YH residents put emphasis on the social and communicative skills. In contrast, clinical residents only mention that physicians should be able to cope with aspects of their profession such as working with uncertainties or making mistakes (Figure 3).

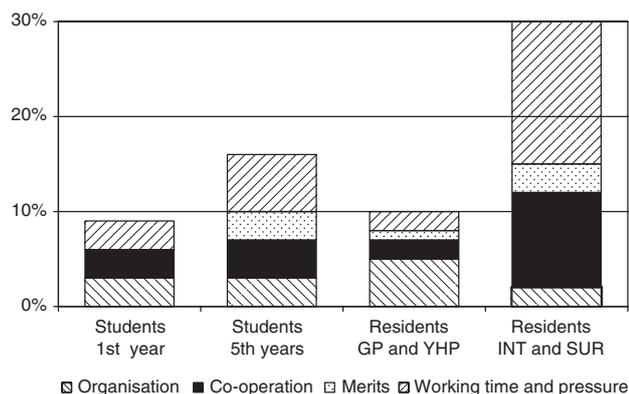


Figure 4. Distribution of episodes within 'Working conditions', as percentage of all episodes.

Personality. First-year students frequently make remarks about the physician's personality (13% of the episodes): 'being interested in people', 'careful', 'reliable', 'calm', 'respecting others', 'patient' and 'emphatic'.

'A physician must be able imagine the position of his patients, he needs to be patient, respectful, reliable; he has to be more or less like a father to them' (first-year student).

Some fifth-year students and non-clinical residents also give descriptions of the physician's personality such as 'being interested in people', while only one clinical resident does.

Working conditions

Although the number of episodes concerning the working condition differs strongly between the four groups, the content of the episodes does not differ much (Figure 4).

Organization and co-operation. All groups give the same descriptions of the organizations in which physicians work: hospitals or solo-practice. No interviewee refers to non-clinical organizations in which physicians can work, like public health organizations.

All groups mention that physicians mostly work in teams with colleague physicians and nurses, or solo in case of the GP. Residents in general practice and internal medicine also describe the nature of the co-operation, stressing the role of the GP and the internist as an intermediate between the different medical disciplines. Only residents in youth health mentioned co-operation with non-medical professionals, such as police officers and schoolteachers.

Merits. Few episodes are made on the merits of the profession such as income or prestige (3% of all episodes of fifth-year students and clinical residents, other groups 0–1%).

Working time and pressure. All groups mention the long and stressful working days of the physician, except the youth health physician who is perceived to have less and regular working hours. Students during their clerkships and clinical residents often mention this aspect of the working conditions

(fifth-year students: 7%, residents internal medicine and surgery: 16%), referring often to the 'on call' duties, which are perceived as most stressful.

Conclusions and discussion

Early in medical education, students appear to perceive the medical profession in a limited number of dimensions and within these dimensions they refer to few aspects. Only two activities of the physician are mentioned, 'talking with patients' and 'operating'. These junior students can hardly distinguish between medical specialties, only referring to physical activities and familiarity with patients and their backgrounds as differentiating qualities. Many remarks of first-year students concern social aspects of the profession, such as communication and social-emotional guidance of patients. Hardly any technical aspects of the profession are mentioned (except 'operating'). Unlike clerks and residents, first-year students stress the knowledge, skills and personality of the physician. Physicians should be interested in people and their problems and should have personalities patients can put confidence in.

Students with clinical experience perceive the medical profession by almost the same dimensions as the residents. Contrary to junior students, they perceive many different activities of the physician and many differences between specialties. But like juniors, social aspects of the profession dominate senior students' perceptions. In contrast, only one resident mentions these aspects.

Residents also do not often mention physician characteristics: most of all they perceive aspects related to content of the work, stressing the differences between the medical specialties. As can be expected for residents aspects of the working conditions are more dominant in their perception.

Using qualitative methodology a good categorization of students' perceptions of the medical profession could be made. Almost all remarks (95.7%) could be classified within one of the three main categories. In interview studies like this one the outcome of the data analysis is dependent of the researchers doing the analysis. Therefore Strauss and Corbin (1990) stress the importance of a clear, understandable and controllable process of data analysis. In this study, asking two judges to code the interviews independently reduced subjectivity. By calculating frequencies of episodes per (sub)category over- or under-estimation of particular themes was avoided. Nevertheless the results might be biased, because of the different interview design for the clinical residents and the small number of respondents that were interviewed. The main merit of this study is to 'generate new theories' (Strauss & Corbin, 1990) about students' perceptions of their future profession. These theories should be subsequently verified by quantitative research.

Many studies of medical students' career choice focus on working conditions, operationalized as income, prestige or life style (Reed *et al.*, 2001). In this study students seldom mention these aspects before graduation, probably because they are only minor aspects in (early) decisions to career choices.

An interesting finding is that students at the end of their first year only mention two activities of a physician: talking

with patients and operating. Many other common activities (physical examination, patient administration, consulting colleagues) are not mentioned. Even fifth-year students leave out these activities. It clearly cannot be that they are not known. Strack and Schwarz (1992) stress that participants in a study, while answering questions, not only try to understand the questions semantically but also try to understand the supposed research aim. Maybe the interviewees considered these common activities uninteresting for research purposes.

Practice points

- Students perceive the medical profession in three dimensions: content of the work, physician characteristics and working conditions.
- Junior students do not see as many differences between specialties, as students with clinical experience and graduated students do.
- Undergraduate students' perception is especially dominated by the social aspects of the profession.

Acknowledgements

We would like to thank E.F.J.M. Custers, F. Koens and M.J. Quaak for their willingness to code the interviews as a second judge, which was a time-consuming and difficult job to do. We are grateful to W.A. Bax and T. Frakking for asking residents of internal medicine and surgery to volunteer in this study.

Notes on contributors

DR M.G.H. NIEUWHOF (†) was senior researcher/consultant at UMC Utrecht, School of Medical Sciences. She deceased in December 2003.

DR J.J.D.J.M. RADEMAKERS is associate professor at UMC Utrecht, School of Medical Sciences, Center for Research and Development of Education.

DR M.M. KUYVENHOVEN is senior lecturer at UMC Utrecht, Julius Center for Health Sciences and Primary Care.

DR M.B.M. SOETHOUT is education coordinator of the Department of Public and Occupational Health at the Free University Medical Center Amsterdam, Department of Public Health.

Professor DR TH. J. TEN CATE is professor of medical education and associate dean of education at UMC Utrecht, School of Medical Sciences, Center for Research and Development of Education.

References

BLAND, C.J., MEURER, L.N. & MALDONADO, G. (1995) Determinants of primary care specialty choice: a non-statistical meta-analysis of the literature, *Academic Medicine*, 70, pp. 620–641.

- BROOKS, R.G., WALSH, M., MARDON, R.E., LEWIS, M. & CLAWSON, A. (2002) The roles of nature and nurture in the recruitment and retention of primary care physicians in rural areas: a view of the literature, *Academic Medicine*, 77, pp. 790–798.
- FISHMEN, D.B. & ZIMET, C.N. (1972) Specialty choice and beliefs about specialties among freshman medical students, *Journal of Medical Education*, 47, pp. 524–533.
- FURNHAM, A. (1986) Career attitudes of preclinical medical students to the medical specialties, *Medical Education*, 20, pp. 286–300.
- GORENFLO, D.W., RUFFIN, M.T. & SHEETS, K.J. (1994) A multivariate model for specialty preference by medical students, *Journal of Family Practice*, 40, pp. 536–537.
- GRAYSON, M.S., DALE, A., NEWTON, M.D. & WHITLEY, T.W. (1996) First-year medical students' knowledge of and attitudes towards primary care careers, *Family Medicine*, 28, pp. 337–342.
- GRAYSON, M.S., KLEIN, M. & FRANKE, K.B. (2001) Impact of a first-year primary care experience on residency choice, *Journal of General Internal Medicine*, 16, pp. 860–863.
- KIKER, B.F. & ZEH, M. (1998) Relative income expectations, expected malpractice premium costs, and other determinants of physician specialty choice, *Journal of Health and Social Behavior*, 39, pp. 152–167.
- LYNCH, D.C., NEWTON, D.A., GRAYSON, M.S. & WHITLEY, T.W. (1998) Influence of medical school on medical students' opinions about primary care practice, *Academic Medicine*, 73, pp. 433–435.
- MEURER, L.N., BLAND, C.J. & MALDONADO, G. (1996) The state of the literature on primary care specialty choice: were do we go from here?, *Academic Medicine*, 71, pp. 68–77.
- NEWTON, D.A., GRAYSON, M.S. & WHITLEY, T.W. (1998) What predicts medical students career choice?, *Journal of General Internal Medicine*, 13, pp. 200–203.
- PAIVA, E.A. & HALEY, H.B. (1971) Intellectual, personality, and environmental factors in career specialty preferences, *Journal of Medical Education*, 46, pp. 281–289.
- POMEY, M.P., BAIL, P., JOUQUAN, J., LOCQUET, C., TISON, H.P., HIVON, R., et al. (1997) Connaissances et croyances des étudiants en 4e année des études de médecine à l'égard des pratiques professionnelles en médecine générale (Knowledge and beliefs of fourth year medical students concerning professional practices in general medicine.), *Santé Publique*, 9, pp. 207–220.
- PRUESSNER, H.T., HENSEL, W.A. & RASCO, T.L. (1992) The scientific base of generalist medicine, *Academic Medicine*, 67, pp. 232–235.
- REED, V.A., JERNSTEDT, C. & REBER, E.S. (2001) Understanding and improving medical students specialty choice: a synthesis of the literature using decision theory as a referent, *Teaching and Learning in Medicine*, 13, pp. 117–129.
- SAVICKAS, M.L., ALEXANDER, D.E., JONAS, A.P. & WOLF, F.M. (1986) Difficulties experienced by medical students in choosing a specialty, *Journal of Medical Education*, 61, pp. 467–469.
- STRACK, F. & SCHWARZ, N. (1992) Communicative influences in standardized questions situations: the case of implicit collaboration, in: G. Semin & K. Fiedler (Eds) *Language, Interaction and Social Cognition* (London, Sage Publications).
- STRAUSS, A. & CORBIN, J. (1990) *Basics of Qualitative Research. Grounded Theory Procedures and Techniques* (London, New Delhi, Sage Publications).
- TEN CATE, O., SNELL, L., MANN, K. & VERMUNT, J. (2004) Orienting teaching towards the learning process, *Academic Medicine*, 79, pp. 219–228.
- UNDERWOOD, M.J., THOMPSON, M. & McCASKIE, A. (1990) Insight in first-year medical students into their future working conditions, *Medical Education*, 24, pp. 210–211.