

Changes in the Knowledge of and Attitudes Toward Family Medicine After Completing a Primary Care Course

Francisco Escobar Rabadán, MD; Jesús López-Torres Hidalgo, MD

Background and Objectives: *The study's objective was to determine medical students' knowledge of and attitudes toward family medicine before and after completing a course in primary care. **Methods:** Before and after a course in primary care, 81 medical students were asked to respond to a self-administered, anonymous questionnaire, comprising 34 items that measured students' attitudes and knowledge about primary care that uses a 5-point Likert response scale. **Results:** Forty-four (54.3%) students completed both the pre-course and post-course questionnaires. Before the course, 38.6% looked favorably upon the specialty of family medicine. After the course, the percentage increased to 70.4%. Nevertheless, only 11.4% initially considered family medicine as a first career option, and their attitude did not change after the course. **Conclusions:** After completing the course, the students showed an improvement in their knowledge of and attitudes toward family medicine and primary care, but only a small percentage considered a career in family medicine as a first-choice option.*

(Fam Med 2010;42(1):35-40.)

The teaching of family medicine is inconsistent in Spanish medical schools. In many cases it is only taught indirectly through primary care courses or through clinical clerkships in family medicine, which are often optional. Curricula are hospital-based, and there is little emphasis on prevention, doctor-patient communication, teamwork, or community activities. Given these circumstances, it is not surprising that family medicine is not only “the great unknown” within the faculty, and there is a tendency for both students and teachers to undervalue family medicine. As in many medical schools elsewhere, medical schools in Spain do not encourage students to consider family medicine as a career choice.¹

Nevertheless, almost half of Spanish medical school graduates will end up working in a primary care setting.² Further, the practice of medicine in the 21st century will require well-trained primary care physicians who are versed in the practice of multidisciplinary and

collaborative medicine.³ To provide efficient, high-quality patient care, doctors, regardless of specialty, must have a fundamental understanding of how the health care delivery system works and how to appropriately use the various components of this system.⁴ Indeed, even in medical school systems that are specialist dominated, exposure to primary care medicine can allow students to gain an understanding of the importance of primary care and of the significance of the family physician's role in the health care system.⁵ International recommendations for medical training, implemented since the beginning of the 1990s, have included an integrated preclinical and clinical curriculum and early patient contact and more emphasis on teaching within the community, often in the offices of family physicians.⁶⁻⁸ Such early experiences support the learning of both biomedical and behavioral/social sciences and helps students acquire communication and basic clinical skills.⁹

Family medicine has existed as specialty in Spain for 30 years. Currently, postgraduate training length is 4 years. Around 40% of medical school graduates choose family medicine. The Albacete Medical School, with only a decade of existence, has a required course in primary care for medical students in their second

From the Healthcare Service of Castilla-La Mancha (SESCAM), Albacete, Spain.

year of a 6-year undergraduate program. It is the first clinical experience of the students.

Our hypothesis was that taking a course in primary care will improve students' knowledge of family medicine and will help them develop a more positive attitude toward it. Our objective was to determine medical students' knowledge of and attitude toward family medicine before starting the primary care course and to establish if there was any change in their knowledge and attitude after completing the course.

Methods

Primary Care Course

The primary care course is 4 months long and provides five credits (a credit equals 10 hours of training), 1.5 of which are theory credits. The rest are practice credits, corresponding to a 1-week clinical clerkship in a primary care center in the city of Albacete. During the week, students accompany a family physician during all of the physician's daily activities.

Questionnaire

After a literature review, we drafted a questionnaire that was evaluated by primary care faculty for relevance, content and construct validity, and ease of understanding. The questionnaire was then revised based on feedback from the faculty.

The final questionnaire had 34 closed-response items about attitudes toward and knowledge about primary care. Each question had five response options on a Likert scale ranging from 1 (completely disagree) to 5 (completely agree). The questionnaire had acceptable internal consistency (Cronbach's alpha test: 0.67), and it included eight components that explained 62% of the total variance in total score.

The questionnaire also contained questions about the sociodemographic and academic characteristics of the students, including age, sex, number of habitants in their home town, socioeconomic status (estimated according to the Domingo and Marcos classification,¹⁰ which bases socioeconomic status on the occupation of the father and mother), number of courses still pending from the first year of medical school, and grades on entry into medical school.

Study Procedures

The 81 students taking the primary care course in the 2005–2006 academic year were asked to complete the pre-course questionnaire on the day before classes began (January 30, 2006). On the day of the final examination for the course (June 1, 2006), the students were again invited to answer the same questionnaire. The methods for the study were approved by the ethical committee of the sanitary area of Albacete, Spain. Students' participation in the study was voluntary.

Students did not include their name on the returned questionnaire, but we did ask them to provide a reference number (last four digits of their National Identity Document). This permitted us to link pre-course and post-course questionnaires as coming from the same individuals.

Data Analysis

The collected data were coded and entered into a computerized database using the SPSS 14.0 statistical program. For the statistical analysis, we re-coded the responses to all the questions so that "1" represented the most unfavorable option and "5" the most favorable. We used inverted scales ("1" for favorable and "5" for unfavorable) for five items on the questionnaire.

We started the data analysis with a description of the different variables and a comparison of the student group who had answered the first questionnaire before the course with the whole group who answered at the end. The Pearson chi-squared test was used to compare the qualitative variables. Student's *t* test was used for the comparison of the means of continuous variables with normal distribution, and non-parametric tests (Mann-Whitney U) were used if not.

We analysed the responses to the 34 questionnaire items, evaluating the students' level of knowledge and their attitudes before starting the course, which we compared with those after completing the course. We used the Wilcoxon signed-rank sum test to evaluate the statistical significance of the possible changes in scores for the different items. We also calculated the effect size for each item, subtracting the item mean in the pretest from the corresponding item mean in the posttest and dividing the result by the standard deviation of the item in the pretest.¹¹

Results

The day before the primary care course classes started, 44 students (54.3% of the 81 students enrolled) completed the questionnaire. After taking the final exam, 79 students (97.5%) completed the questionnaire. Table 1 displays the socio-demographic and academic characteristics of the students who participated. There were no statistically significant differences for any of the variables between the entire group of students who completed the questionnaire the day before the start of the course and those who did so after taking the final exam.

Tables 2 and 3 display the comparison of scores before and after the course. The students' opinion of primary care and family medicine was, on the whole, more favorable after the course. Prior to starting the primary care course, 38.6% of students said they would like to become a family physician in the future; this rose to 70.4% after completing the course ($P < .0001$).

Table 1

Sociodemographic and Academic Characteristics of Participating Students

	First Questionnaire	Second Questionnaire
	# (%)	# (%)
Age		
19	32 (74.4)	61 (79.2)
20	9 (20.9)	11 (14.3)
21–25	2 (4.6)	5 (6.5)
Not given	1	2
Sex		
Female	33 (75)	54 (68.4)
Male	11 (25)	25 (31.6)
Number of inhabitants in their home town		
<10,000	11 (28.9)	20 (29.8)
10,000–30,000	8 (21.1)	17 (25.4)
30,001–100,000	1 (2.6)	5 (7.5)
>100,000	18 (47.4)	25 (37.3)
Not given	6	12
Social class		
Upper and upper middle	20 (48.8)	35 (50.0)
Middle	17 (41.5)	30 (42.9)
Lower middle and low	4 (9.7)	5 (7.1)
Not stated	3	9
Subjects pending		
0	43 (97.7)	74 (96.1)
1	1 (2.3)	3 (3.9)
Not given		2
Mean grade on entry (maximum: 10)	8.71 (SD: 0.48)	8.66 (SD: 0.49)

We also found that although 77.3% rejected the notion of a primary care career before the course, only 38.6% ($P = .001$) did so after the course. Despite this apparent increase in favorable ratings of a primary care career, only 11.4% considered primary care to be their first career choice, both before and after the primary care course.

There was also a clear improvement after the course for the items that we considered to evaluate acquired knowledge of primary care (Table 3). The students recognized that they had improved their knowledge of family physicians' professional tasks; agreement with the statement that they have a good knowledge of this increased from 34.1% to 97.7% ($P < .0001$).

The mean score for the items that mainly evaluated attitudes was 3.44 (SD=0.26) before starting the course, increasing to 3.78 (SD=0.38) at the end of the course ($t = -5.4$, $P < .0001$). There was also a significant increase in the mean scores of those items that evaluated knowledge ($t = -13.8$; $P < .0001$), increasing from 3.59 (SD=0.31) to 4.25 (SD=0.32). The mean score of the whole of the

questionnaire increased from 3.51 (SD=0.22) to 4.02 (SD=0.29), with a statistically significant difference ($t = -10.8$, $P < .0001$).

Discussion

After they had completed the primary care course, the second-year medical students' opinions about primary care and family medicine were more favorable. The students' recognition of most of the characteristics of family medicine improved significantly by the end of the course.

The proportion of students who said they would like to become a family physician in the future also increased after completing the course, though the percentage that ranked family medicine as a first choice career did not change. In this respect, our figures are similar to those of Wright et al¹² from a study in Canada. In that study of 519 students in the first 2 weeks of their medical course, 19.5% considered family medicine to be their first career option—similar to the 11.4% found in our study. But, the fact that there was no increase in the percentage of students whose first-choice specialty was family medicine indicates that more than a single course is needed to increase students' interest in a primary care career.

Encouraging students to enter primary care careers is a challenge that requires actions on several fronts. Changes in the attitudes of medical academia must occur if a more favourable climate toward primary care is to be achieved.¹³ But even taking this into account, our students' initial lack of knowledge and poor opinion of family medicine and primary care is noteworthy, especially when compared with the opinions of students in other countries. In the United States, Grayson et al¹⁴ showed that students had a good knowledge of the characteristics of primary care, with favorable attitudes toward the importance and need for primary care, and a higher percentage of American students planned careers in primary care than do students in Spain.

The experience of students during clinical clerkships has a significant effect on their attitudes toward all specialties, and the interest in a specialty tends to increase after a clerkship in that specialty, including the specialty of family medicine.^{5,15–18} Indeed, several studies carried out in Spain confirm students' positive opinion of clerkships in primary care health centers,^{19–22} and such preclinical training results in better clinical performance by the students.²³

We should ask ourselves how students' opinions on family medicine and primary care will develop over their future academic years. It is possible that our clerkship in primary care, which is our students' first clinical experience, could have caused, in the words of Miettola et al,²⁴ a "honeymoon effect." In other words, family medicine may have been so fascinating to the students that they may have remembered the positive rather than

Table 2
Students' Scores on Attitude Items, Before and After the Course

Item	Pretest					Posttest					P Value	Effect Size
	1	2	3	4	5	1	2	3	4	5		
1. I would like to become a family doctor in the future	0	13	14	16	1	0	3	10	24	7	<.0001	0.79
2. Potential of family medicine to improve the health of the community	0	0	4	27	13	0	0	1	14	29	<.0001	0.74
3. Better health care compared to the previous ambulatory system	0	0	16	23	5	0	0	2	14	28	<.0001	1.29
6. Family medicine as first career choice	11	23	5	4	1	4	13	22	3	2	.001	0.59
7. Knowledge is useful although I will choose another specialty	0	0	2	14	28	0	0	1	19	24	.52	0.13
8. Responsibility of the family doctor for the health of the community	0	0	3	24	17	0	0	1	14	29	.004	0.53
9. Teamwork improves medical care	0	1	2	16	25	0	0	1	10	33	.03	0.36
10. Containing expenses is more feasible in primary care	0	2	25	12	3	0	1	8	14	19	.0001	1.24
15. Family doctors manage health problems of little importance	0	5	9	24	6	2	5	5	22	10	.823	0.06
21. Family medicine highly valued in the faculty	2	19	15	8	0	2	13	13	12	4	.046	0.49
22. Impossible to be an expert in such a wide field as family medicine	3	9	18	14	0	6	15	8	13	2	.291	0.23
23. Family medicine is not a very intellectually stimulating speciality	0	15	9	16	4	1	5	7	22	9	.008	0.54
25. Family doctors are poorly valued in our society	7	25	5	7	0	7	19	8	10	0	.299	0.23
26. Family doctors are poorly valued by the rest of the medical profession	6	22	14	2	0	9	23	7	5	0	.549	0.12
27. A course in primary care in the medical faculty is appropriate	0	0	1	13	30	1	0	3	13	27	.159	0.34
28. Family medicine should be a cross-sectional course	2	5	17	16	4	5	3	12	14	10	.463	0.15
31. The family doctor is clinically competent to provide most of the health care an individual may require	0	5	14	21	4	0	0	3	18	23	.0001	1.1

Scores are on a 5-point Likert scale, with 1 representing least favorable and 5 representing most favorable ratings. Items 15, 22, 23, 25, and 26 were scored in reverse. Numbers in cells represent the number of students responding to each rating score.

the negative experiences. Students' positive perceptions about primary care practice may decrease, however, as realistic perceptions about the professional demands on primary care physicians develop during medical school.²⁵ However, there is also a possibility that this attitude toward family medicine is even more positive when medical students end their undergraduate years. This may be partially explained by the greater contact with family physicians.²⁶ In this respect we emphasize that students at the Albacete Faculty of Medicine have one week of practical training in primary care in their second year (ie, the subject of this paper), another one week of primary care training in their third year (during a clinical psychology course), and another in their fifth year (within the medicine and surgery courses).

For this reason, we consider that our study should be continued with a further assessment of students in their final year, when they are close to graduating.

Limitations

Our study has some limitations. One is the low response rate for the first versus second administration of the survey. We consider it circumstantial, mainly due to weather, because the day the students were asked to complete the questionnaire was the Monday after a weekend in which there had been a heavy snowfall, and many of the roads were closed. The characteristics of the students who completed the questionnaire the day before the start of the course were similar to the whole who did it after taking the final exam.

Table 3
Students Scores on Knowledge Items, Before and After the Course

Item	Pretest Scoring					Posttest Scoring					P Value	Effect Size
	1	2	3	4	5	1	2	3	4	5		
4. High satisfaction of patients with primary care	0	0	14	16	14	0	3	9	29	3	<.0001	0.9
5. Primary care is more cost-effective than hospital care	4	10	17	12	1	3	8	9	9	15	.002	0.67
11. Good knowledge of family doctors' professional tasks	0	8	21	12	3	0	0	1	29	14	<.0001	1.29
12. Primary care is the first medical contact with the health care system	0	0	0	22	22	0	0	0	3	41	<.0001	0.85
13. Clinical history is a fundamental tool for the family doctor	0	1	4	22	17	0	0	1	7	36	<.0001	0.76
14. Diagnostic tests have less certain positive predictive value in family medicine.	0	9	25	7	1	1	9	9	17	6	.026	0.67
16. Continual improving quality of care is a main objective	0	0	3	30	11	0	0	2	19	23	.007	0.56
17. Family doctors manage health problems unlikely to be resolved	11	30	2	1	0	5	13	6	11	9	<.0001	2.14
18. Large responsibility as regards preventive health care activities	0	1	3	21	19	0	0	0	12	32	.001	0.58
19. Family doctors must have excellent communication skills	0	1	5	22	16	0	2	1	17	24	.04	0.31
20. Family doctors manage chronic health problems	0	13	14	13	3	0	2	2	16	23	<.0001	1.35
24. Family doctors have a large work overload	0	1	7	28	8	0	1	3	22	18	.011	0.48
29. Low efficiency of a health system directed exclusively to diagnosis and treatment	0	6	28	9	1	0	1	4	19	20	<.0001	1.85
30. Family doctors should provide comprehensive and continuing health care	0	3	5	20	16	0	0	1	13	30	.001	0.63
32. Family doctors provide health care at their surgeries and at the patient's home	0	2	4	26	11	0	0	0	12	31	<.0001	0.89
33. Family doctors have little time to dedicate to their patients	0	4	7	23	10	0	1	0	27	16	.003	0.5
34. Family doctors make decisions in highly uncertain circumstances	0	6	14	21	3	0	4	4	20	16	<.0001	0.74

Numbers in cells represent the number of student responding to each rating score.

Another limitation is the lack of a control group. Although this possibility of establishing a control group was considered, we did not pursue this possibility due to the difficulty of getting an appropriate control group.

Conclusions

After completing a course in primary care, second-year medical students showed an improvement in their knowledge of and attitudes toward family medicine and primary care. But even after the course, only a small percentage considered a career in family medicine as a first-choice option.

Acknowledgments: The authors thank Professor Mohammadreza Hojat, PhD, of the Center for Research in Medical Education and Health Care, Jefferson Medical College, Philadelphia, for helping us in this study. We also thank professors Clotilde Fernández Olano, Julio Montoya Fernández, and Pedro Juan Tárraga López, who read the preliminary version of the questionnaire and made valuable suggestions about it and who also collaborated in the distribution of the questionnaires to the students.

Some information in the study was previously presented at the 2008 Wonca Europe Conference and at the 2008 SEMFYC Congress.

Corresponding Author: Address correspondence to Dr Escobar, Centro de Salud Universitario Zona IV, C/ Seminario, 4, Albacete, Spain. +967510094. Fax: +967507362. fjescobarr@sescam.jccm.es.

REFERENCES

1. Hill-Sakurai LE, Schillinger E, Rittenhouse DR, et al. Do required preclinical courses with family physicians encourage interest in family medicine? *Fam Med* 2003;35(8):579-84.
2. Domingo I, Salvany PM. Estudiantes, universidad y medicina de familia. *Aten Primaria* 1997;19:279-82.
3. Pipas CF, Peltier DA, Fall LH, et al. Collaborating to integrate curriculum in primary care medical education: successes and challenges from three US medical schools. *Fam Med* 2004;36 Suppl:S126-S132.
4. O'Connell MT, Rivo ML, Mechaber AJ, Weiss BA. A curriculum in systems-based care: experimental learning changes in student knowledge and attitudes. *Fam Med* 2004;36 Suppl:S98-S104.
5. Dixon AS, Lam CLK, Lam TP. Does a brief clerkship change Hong Kong medical students' ideas about general practice? *Med Educ* 2000;34:339-47.
6. Hampshire AJ. Providing early clinical experience in primary care. *Med Educ* 1998;32:495-501.
7. Haffing AC, Hakansson A, Hagander B. Early patient contact in primary care: a new challenge. *Med Educ* 2001;35:901-8.
8. Mathers J, Parry J, Lewis S, Greenfield S. What impact will an increased number of teaching general practices have on patients, doctors, and medical students? *Med Educ* 2004;38:1219-28.
9. Dornan T, Littlewood S, Margolis SA, Scherpbier A, Spencer J, Ypinazar V. How can experience in clinical and community settings contribute to early medical education? A BEME systematic review. *Med Teach* 2006;28:3-18.
10. Domingo A, Marcos J. Propuesta de un indicador de la clase social basado en la ocupación. *Gac Sanit* 1989;3:320-6.
11. Hojat M, Xu G. A visitor's guide to effect sizes. Statistical significance versus practical (clinical) importance of research findings. *Adv Health Sci Educ Theory Pract* 2004;9:241-9.
12. Wright B, Scott I, Woloschuk W, Brenneis F. Career choice of new medical students at three Canadian universities: family medicine versus specialty medicine. *CMAJ* 2004;170:1920-4.
13. Block SD, Clark-Chiarelli N, Peters AS, Singer JD. Academia's chilly climate for primary care. *JAMA* 1996;276:677-82.
14. Grayson MS, Newton DA, Whitley TW. First-year medical students' knowledge of and attitudes toward primary care careers. *Fam Med* 1996;28(5):337-42.
15. Earney S, Biddle B, Siska K, Riesenber L. Change in medical students' attitudes about primary care during the third year of medical school. *Acad Med* 1994;69:927-9.
16. Musham C, Chessman A. Changes in medical students' perceptions of family practice resulting from a required clerkship. *Fam Med* 1994;26(8):500-3.
17. Hunsaker ML, Glasser ML, Neilssen KM, Lipsky MS. Medical students' assessments of skill development in rural primary care clinics. *Rural Remote Health* 2006;6:616.
18. Lam TP. Medical graduates' attitudes towards their undergraduate general practice teaching in Hong Kong. *Med Teach* 1997;19:62-4.
19. Otero A, Carreira J, Villamor J. Nuevas tendencias en la enseñanza de la medicina. Evaluación de la rotación en centros de salud. *Aten Primaria* 1992;9:512-5.
20. Quirce F, Gil VF, Uris J, et al. Formación de pregrado en atención primaria: seis años de experiencia en la Universidad de Alicante. *Aten Primaria* 1993;11:281-5.
21. Buitrago F, Vergeles JM, Cano-Hernández E. Evaluación de la rotación en centros de salud de los alumnos de la Facultad de Medicina de la Universidad de Extremadura. *Aten Primaria* 1994;13:118-24.
22. Santos Suárez J, Santiago Álvarez M, Alonso Hernández PM, Alonso Llamas MA, Merladet Artiach E, Corrales Fernández E. Medicina de familia: ¿la cenicienta del pregrado? Estudio de la opinión de los estudiantes de medicina sobre la especialidad de medicina familiar y comunitaria. *Aten Primaria* 2001;27:324-30.
23. Nieman LZ, Cheng L, Hormann M, Farnie MA, Molony DA, Butler B. The impact of preclinical preceptorship on learning the fundamentals of clinical medicine and physical diagnosis skills. *Acad Med* 2006;81:342-6.
24. Miettola J, Mäntyselkä P, Vaskilampi T. Doctor-patient interaction in Finnish primary health care as perceived by first-year medical students. *BMC Med Educ* 2005;5:34.
25. Lynch DC, Newton DA, Grayson MS, Whitley TW. Influence of medical school on medical students' opinions about primary care practice. *Acad Med* 1998;73:433-5.
26. Henderson E, Berlin A, Fuller J. Attitude of medical students towards general practice and general practitioners. *Br J Gen Pract* 2002;52:359-63.