

## LONG-TERM EVALUATION OF UNDERGRADUATE FAMILY MEDICINE CURRICULUM IN SLOVENIA

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### SUMMARY

**Introduction** In 1994, as a result of curriculum reform, the Ljubljana medical school established its first department of family medicine and introduced its first curriculum of family medicine. The new subject was well accepted by the students and the medical school. Nevertheless, there was no comprehensive analysis of the curriculum during this period.

**Objective** Our aims were to assess the quality of teaching based on fulfilled expectations, pre-defined learning objectives and satisfaction in a 10-year period, and to measure changes in career preference towards family medicine.

**Method** An analysis of two sets of questionnaires, routinely given to medical students in academic years 1997/1998 and 2006/2007, was made.

**Results** Most of the students' expectations were met, and the level increased over ten years. The level of achievement of learning objectives has been high and increased over the ten-year period. Family medicine still receives high scores in students' satisfaction. Although there is evidence that the family medicine curriculum is well accepted and that it improves some of the attitudes towards family medicine, it does not influence the career choice of students.

**Conclusion** The level of achievement of learning objectives increased with the experiences of the teachers. We improved the attitude of medical students toward general practice and general practitioners. We have not been successful in influencing career choice of students, which is an objective that is probably outside our reach.

**Key words:** undergraduate family medicine curriculum; programme evaluation; ten-year period; Slovenia

### INTRODUCTION

In the past years, medical schools were repeatedly criticised that they did not respond to needs of the population and that they did not teach students about the health problems that they were most likely to encounter when they were going into practice [1, 2]. As a result of this criticism, many of the schools introduced reforms in their curricula [3]. One of the frequent interventions was to introduce family medicine as part of the curriculum in order to give students the opportunity to get in contact with most frequent problems, to integrate and apply their knowledge [4-6].

The Ljubljana medical school introduced the programme of family medicine more than ten years ago. The programme is conducted in seven weeks' blocks, where work with tutors in practice is combined with structured teaching at the department [7]. There were some doubts whether the new discipline will manage to fulfil the strict criteria of academic standards. Ten years after the introduction of the new subject, the family medicine curriculum seems to be a success, based on the usually accepted criteria of publication in high quality journals. Nevertheless, the quality of teaching was properly evaluated only at the introduction of the programme, where the programme was described and the first analysis was made [7]. Although there have been no complaints about the teaching processes and there is a general belief that the programme is successful, an analysis of the curriculum after ten years is necessary in order to validate its quality.

### OBJECTIVE

Our aims were to assess the quality of teaching based on fulfilled expectations, pre-defined learning objectives and satisfaction in a 10-year period, and to measure changes in career preference towards family medicine.

We wanted to assess four outcomes: the fulfilment of students' expectations of the programme, the level of achievement of pre-determined learning objectives, students' satisfaction with the programme, potential influence on their career choice.

### METHOD

#### The questionnaire

The study was done by analysing questionnaires that were routinely given to students over the period of ten years. Two questionnaires were routinely given to all students. The initial questionnaire had questions about expectations of the subject, a set of statements aimed at their attitudes towards family medicine, and a question regarding their willingness to work as GPs in future. The questionnaire that was given at the end of every rotation had four sets of questions: whether the expectations were met, attitudes towards family medicine, students' satisfaction with the programme and willingness to work in family medicine.

### Students' expectations

The student expectation part of the questionnaire was developed by qualitative analysis. At the beginning of the programme, all the students were asked to name their expectations. All the expectations were then coded, rephrased and entered in the final questionnaire. This process was repeated until saturation was reached. This was done in years 1994/1995, after analysing 87 questionnaires. The list of expectations was checked again every year on a smaller group of students, but after two years, no significant new expectations were obtained.

The list of expectations derived in that way was as follows: to learn new theories, to learn new things, to apply what they already know, to see how GPs work, to recognise common diseases, to understand laboratory findings, to know which drugs to prescribe, to know when to refer to a specialist, to examine patients, to practise manual skills, to be able to differentiate between complicated and simple cases, to know how to communicate with patients, to be able to reach quick decisions, to know how to keep records, to be able to work in a team, to know how to fill in forms, to know how to act in emergencies, to work independently, to learn responsibility.

### Pre-defined learning objectives

The second list of objectives was developed by the faculty in 1994. The objectives were a result of discussions at the department, based on previous experiences with medical students, consultations with the members of Family Medicine Society and a review of literature. The objectives were: to recognise the importance and possibilities of practice organisation (record keeping, team work and independent practice), to recognise the importance of specific skills in family medicine (home visits and referral), to change the negative attitude towards quality in family medicine, and to become more confident to work as a physician.

The objectives were tested by agreement with statements related to the objectives. A five point Likert scale was used for each of the statements.

### Satisfaction and career choice

Satisfaction with the programme was tested by giving a score to the subject. The scale from 5 to 10 (10 meaning the highest satisfaction) was used.

Career choice was assessed by stating a preference to choose family medicine as a career option. A five point Likert scale was used.

### Response rate and analysis

We have analysed both sets of questionnaires from academic year 1997/1998 and 2006/2007.

In the academic year 1997/98 we had 172 students. We lost final questionnaires of one of the group of students from the year 1997/98 (45 questionnaires). In the academic year 2006/07 we had 140 students who fulfilled 129 final (response rate 92.1%) and 123 initial questionnaires.

SPSS statistical software (version 14.0) was used for all statistical analyses. Methods of descriptive statistics were used for the description of samples, t-test was used for comparison between independent samples and chi-square test to detect qualitative differences between samples. The level of significance was  $p < 0.05$ .

The study protocol was approved by the National Ethical Committee.

## RESULTS

Response rate in the academic year 1997/98 was 99.2% for initial and 87.0% for final questionnaires. Response rate in the academic year 2006/07 was 87.9%.

### Students' expectations

Table 1 shows how much the students' expectations were met. We can see that the level in which the expectations were met is always the same or higher in 2006 than 1997. All areas have expectation levels higher than 3 and only five scored less than four. Overall, in half of expectations the scores improved in the last 10 years. Communication skills and clinical examination received the highest scores.

TABLE 1. Scores of expectations (Likert scale: 1 – not at all; 5 – entirely).

Parameter	Mean (SD)		p
	1998	2006	
Theory	3.65 (0.887)	3.74 (0.906)	0.466 (NS)
New knowledge	3.89 (0.831)	4.16 (0.827)	0.012
Application of existing knowledge	4.06 (0.751)	4.25 (0.761)	0.059 (NS)
Seeing doctors' work	4.54 (0.614)	4.66 (0.667)	0.139 (NS)
Recognition of frequent diseases	4.17 (0.683)	4.47 (0.601)	<0.001
Laboratory findings	3.85 (1.02)	3.98 (0.897)	0.331 (NS)
Drug prescribing	4.11 (1.01)	4.33 (0.938)	0.075 (NS)
Referrals	4.04 (0.894)	4.27 (0.846)	0.037
Clinical examination	4.14 (0.949)	4.45 (0.774)	0.005
Manual skills	3.75 (1.013)	4.17 (0.920)	0.001
Differentiation between complicated and simple cases	4.04 (0.684)	4.17 (0.719)	0.139 (NS)
Communication with patients	4.45 (0.721)	4.67 (0.629)	0.011
Quick decisions	3.55 (1.00)	3.75 (0.952)	0.117 (NS)
Record keeping	4.06 (0.893)	4.29 (0.922)	0.049
Team work	4.32 (0.801)	4.33 (0.904)	0.892 (NS)
Filling in forms	3.60 (1.094)	3.89 (0.903)	0.026
Emergencies	3.25 (1.227)	3.30 (1.08)	0.753 (NS)
Independence	3.62 (1.02)	4.01 (0.926)	0.002
Responsibility	3.70 (0.89)	4.07 (0.920)	0.002

SD – standard deviation; NS – not significant

**TABLE 2.** Agreement with statements in the end of rotation (Likert scale: 1 – not at all; 5 – entirely).

Parameter	Statement	Mean (SD)		p
		1998	2006	
Organisation of care	Record keeping is not important	1.26 (0.76)	1.31 (0.76)	0.604 (NS)
	GP could easily work alone	1.62 (0.93)	1.48 (0.71)	0.180 (NS)
	Independent practice is not suitable for general practice	1.56 (0.95)	1.87 (1.03)	0.018
Specific skills	Home visits are a loss of time	1.52 (0.85)	1.68 (0.80)	0.144 (NS)
	The role of a clinical specialist is to be a consultant to GP	3.58 (1.12)	3.16 (1.13)	0.005
Quality in family medicine	Patients are often not adequately examined	2.94 (1.00)	2.43 (1.03)	<0.001
	GPs usually don't know enough to be able to help patients in a professional way	1.85 (1.06)	1.55 (0.90)	0.021
Self confidence	I feel I could start working as a GP	2.22 (1.12)	2.24 (0.97)	0.907 (NS)

SD – standard deviation; NS – not significant

**TABLE 3.** Scores of attitudes: comparing start and end of the study 2006/07 (Likert scale: 1 – not at all; 5 – entirely).

Parameter	Statement	Mean (SD)		p
		Start	End	
Organisation of care	Record keeping is not important	1.25 (0.720)	1.31 (0.761)	0.519 (NS)
	GP could work alone with no troubles	1.50 (0.853)	1.48 (0.71)	0.781 (NS)
	Private practice is not suitable for general practice	1.69 (0.879)	1.87 (1.03)	0.149 (NS)
Specific skills	Home visits are a loss of time	1.51 (0.77)	1.68 (0.80)	0.094 (NS)
	GP is fully responsible for management of the patient, clinical specialists are his consultants	2.85 (1.11)	3.16 (1.13)	0.029
Quality in family medicine	Patients are not adequately examined	3.47 (0.91)	2.43 (1.06)	<0.001
	The knowledge of GPs is too poor to be able to help patients in a professional way	1.88 (0.980)	1.55 (0.90)	0.007
Self confidence	I feel I could start working as a GP	1.76	2.24	<0.001

SD – standard deviation; NS – not significant

**TABLE 4.** Students' satisfaction scores.

Parameter	Mean (SD)		p
	1998	2006	
Teaching in practice	8.85 (1.11)	9.26 (1.14)	0.005
Teaching at the department	8.18 (1.28)	8.73 (1.23)	0.001
Subject in general	8.78 (0.93)	9.04 (0.93)	0.035

SD – standard deviation

**TABLE 5.** Students' wishes to become a physician in primary care (Likert scale: 1 – not at all; 5 – entirely).

Year	Mean (SD)		p
	Start	End	
1998	3.31 (0.835)	3.44 (0.979)	0.255 (NS)
2006	3.23 (0.960)	3.30 (0.967)	0.067 (NS)
p	0.446 (NS)	0.277 (NS)	

SD – standard deviation; NS – not significant

### Pre-defined learning objectives

The changes in learning objectives between the study years are shown in Table 2. Students assessed that the quality of GP's work in 2006/07 was higher than in 1997/98. They estimated organisation of care as similar in both years we compared, but they found private practice as less suitable for general practice than in 1997/98. They did not change the attitudes to home visits, but they found GPs less responsible for the management of the patients' care.

The change of attitudes toward the competences of GPs from the start to the end of the rotation in the study year 2006/07 is shown in Table 3. Comparing the end and start of the rotation, students assessed quality of GP's work as

higher than expected in advance. They found that GPs were more responsible for the patient management. The attitude toward organisation of work did not change during the rotation.

### Satisfaction

Table 4 shows the results of students' assessment of quality of teaching in practice, at the department and the subject in general. One can see that satisfaction is higher for work in practice, and the overall score increased in all areas.

### Career choice

Table 5 is an overview of students' wishes to become a family physician. Although there is a slight increase in interest in primary care between the start and the end of the rotation, this increase is not statistically important. On the other hand, we found a slight decrease of interest in primary care in ten years, but again the difference is not important.

## DISCUSSION

### Methodology

The study is based on an analysis of questionnaires. The method we used was found to be useful in assessing

achievements of course goals in medical students [8]. We assessed quality of the programme by using four different criteria: students' expectations, pre-determined objectives and student satisfaction. We believe that this is an adequate estimate of quality of the programme. We could, however, use other methods as well (e.g. students' grades and knowledge), but the assessment methods were changed over the period we have examined and we could not use them for a period of ten years.

We have taken great care in proper development of the questionnaires, but we will probably have to change the list of pre-determined objectives. The ones we are using now need to be revised according to the new developments in the health care system. Probably they will have to be changed according to the European definition of family medicine and the EURACT teaching agenda of family medicine [9], the key documents used in curriculum design that have been developed after we started with our programme. We think this will add to the consistency of the objectives, but the ones we are using in this report have been useful for the period we have examined.

Although the response rate among the students was very high (practically 100%), we have misplaced one set of questionnaires, and the numbers of questionnaires at the beginning and at the end of our first year of study do not match. Nevertheless, we feel that the loss of the questionnaires is not a source of bias in the study.

## Results

### *Expectations*

As it was predicted, students expect to work practically [10]. The expectations of practical work scored highest and we are very pleased to see that in the majority of students this expectation was met and that the scores have remained high after ten years. This may reflect improvements in our work, but it may also be due to the fact that the students after ten years know better what to expect from the rotation in family medicine [11]. The area that deserves more attention is management of emergencies, where all the students do not receive the same level of training they have expected.

### *Learning objectives*

The results in achieving pre-determined objectives are not as straightforward. Overall, we can see that we manage to improve most students' confidence and the negative attitude towards quality of care in family medicine. Failure to make a change in some areas (e.g. organisation of care, home visits) may be due to the fact that the students already had a relatively clear view on these issues before taking part in the programme.

Students did not change their attitudes towards organisation either through the years, or through the rotation.

The only change in organisation was in the area of independent practice. Students found independent practice as a good solution for family physicians, but the attitude toward it is now less positive than it was ten years ago. This may be the result of reduced enthusiasm about independent practice than ten years ago, when it was introduced.

The programme influences the students' perception of how important a family doctor is compared to a clinical specialist. This change in attitude means that the position of family practitioners is more important than students thought at the beginning of the rotation. Nevertheless, the relative importance of the family doctor has decreased over the years.

We have seen the most important changes in the perceived quality of family medicine. This has changed over the years and within the years to a more favourable attitude [4, 13, 14]. This may be a consequence of improved quality of tutors' work in the last ten years, but it may also reflect their better understanding of clinical competences of general practitioners and how they differ from other clinical specialists, which may be the result of better teaching skills [5].

Rotation in general practice considerably increased self-confidence of students. The programme has given them a lot of chance for practical work in the tutors' practices and this was found by students as very important for self-confidence.

### *Student satisfaction*

Student satisfaction with the programme is higher than ten years ago. In both years students were more satisfied with the work in practice, but the satisfaction is also high with the work at the department. They found that quality of tutoring was the most important factor for high medical students' rating in general practice [15]. Demonstrating professionalism during the attachment in general practice, how the attributes of a good doctor are imparted and acquired and how general practice helps in this regard has already been shown to be an important element of satisfaction with work in practice [16]. This positive finding may also be due to the personal experience of working with a family doctor in practice [13].

It is logical that teaching in practice scored higher than teaching at the department, since the students expected to be taught practical things and not theory. But the satisfaction increased in both fields and this is a good indicator of quality of teaching at the department as well.

### *Career choice*

We have not managed to influence career choice of students. When students are faced with practical work, this is what influences their decision. It appears that students' positive perception about family medicine in principle

has not been transferred to more concrete choices when they were faced with realistic demands on family doctors [17]. Other values than education obviously influence career choice [18].

Nevertheless, we are happy to see that the overall score shows positive trend, which means that we are having a lot of students that are seriously considering family medicine as an attractive career option [19]. Similarly to other authors, we have also found that females are more interested in family medicine [20-22].

## CONCLUSION

Considering that we have introduced a new subject with different teaching methods, our results were promising, although they indicate a need for further improvement. Overall we can conclude that the teaching at the department has improved: we have managed to improve expectations, reach educational objectives and raise student satisfaction. We have not been successful in influencing career choice of students, which is an objective that is probably outside our reach. Also, health policy has also had an impact on some of the objectives. Nevertheless, we have improved the attitude of medical students toward general practice and general practitioners.

Most of the reasons for our success can be attributed to the competence of the tutoring family physicians, who represent the group of the most skilled and enthusiastic family physicians [23].

The results of our curriculum have served as an important source of ideas to other departments and the medical school that has started introducing a new curriculum reform, where some elements of our curriculum will be used (e.g. early clinical exposure, communication).

## ACKNOWLEDGEMENTS

We would like to thank the students who gave us their opinion about our teaching and our profession, our tutors for their work and our secretary Ana Artnak who collected the questionnaires.

## REFERENCES

1. Rabinowitz HK. Family Medicine Predoctoral education: 30-something. *Fam Med* 2007; 39(1):57-9.

2. Howell S. Teaching undergraduate in primary care. *BMJ* 2003; 326:S119-20.
3. Sheets KJ, Quirk ME, Davis AK. The Family Medicine Curriculum Resource Project: Implication for Faculty Development. *Fam Med* 2007; 39(1):50-2.
4. Dixon AS, Lam CL, Lam TP. Does a brief clerkship change Hong Kong medical student's ideas about general practice? *Med Educ* 2000; 34(5):339-47.
5. Robinson LA, Spencer JA, Jones RH. Contribution of academic department general practice to undergraduate teaching, and their plans for curriculum development. *Br J Gen Pract* 1994; 44:489-91.
6. Littlewood S, Ypinazar V, Margolis SA, Scherbier A, Spencer J, Dornan T. Early practical experience and social responsiveness of clinical education: systematic review. *BMJ* 2005; 331:387-91.
7. Švab I. General practice in the curriculum in Slovenia. *Med Educ* 1998; 32(1):85-8.
8. Lubetkin EI, Krackov SK, Storey-Jones C. The use of questionnaire to assess achievements of course goals in medical students' longitudinal community-based clinical experiences. *Acad Med* 1999; 74:1316-9.
9. Heyrman J., editor. The EURACT Educational Agenda. European Academy of Teachers in General Practice EURACT. Leuven; 2005.
10. Kalantan K, Pyrne N, Al-Faris E, et al. Students' perception toward a family medicine attachment experiences. *Educ Health (Abingdon)* 2003; 16(3):357-65.
11. Švab I, Bulc M. Academic Medicine: What Does an Outsider Have to Offer? *Croat Med J* 2004; 45(3):254-5.
12. Švab I, Petek Šter M, Kersnik J, Živčec Kalan G, Car J. Presečna študija o delu zdravnikov splošne medicine v Sloveniji (A cross sectional study of performance of Slovene general practitioners, English summary). *Zdrav Var* 2005; 44(4):183-92.
13. Henderson E, Berlin A, Fuller J. Attitudes of medical students towards general practice and general practitioner. *Br J Gen Pract* 2002; 52:359-63.
14. Musham C, Chessman A. Changes in medical students' perception of family practice resulting from a required clerkship. *Fam Med* 1994; 26(8):500-3.
15. Foldevi M. Undergraduate medical students' rating of clerkship in general practice. *Fam Pract* 1995; 12(2):207-13.
16. Jacobson L, Hawthorne K, Wood F. The 'Mensch' factor in general practice: a role to demonstrate professionalism to students. *Br J Gen Pract* 2006; 56:976-9.
17. Lynch DC, Newton DA, Grayson MS, Whitley TW. Influence of medical school on medical students' opinion about primary care practice. *Acad Med* 1998; 73(4):433-5.
18. Martini CJ, Veloski JJ, Barzansky B, Xu G, Fielda SK. Medical school and student characteristics that influence choosing a generalist career. *JAMA* 1994; 272(9):661-8.
19. Morrison JM, Murray ST. Career preferences of medical students: influence of a new four-week attachment in general practice. *Br J Gen Pract* 1996; 46:721-5.
20. Lambert TW, Goldacre MJ, Edwards C, Parkhouse J. Career preferences of doctors who qualified in the United Kingdom in 1993 compared with those of doctors qualifying in 1974, 1977, 1980 and 1983. *BMJ* 1996; 313:19-24.
21. Lloyd JR, Leese B. Career intention and preferences of GP registrars in Yorkshire. *Br J Gen Pract* 2006; 56:280-2.
22. Sinclair HK, Ritchie LD, Lee AJ. A future career in general practice? A longitudinal study of medical students and pre-registration house officers. *Eur J Gen Pract* 2006; 12(3):120-7.
23. Gray RW, Carter YH, Hull SA, Sheldon MG, Ball C. Characteristics of general practices involved in undergraduate medical teaching. *Br J Gen Pract* 2001; 51:371-4.

## ДУГОРОЧНА ПРОЦЕНА ПРОГРАМА ПОРОДИЧНЕ МЕДИЦИНЕ ЗА РЕДОВНЕ СТУДЕНТЕ У СЛОВЕНИЈИ

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### КРАТАК САДРЖАЈ

**Увод** На Медицинском факултету у Љубљани је после завршене реформе студија 1994. године први пут основана катедра за предмет Породична медицина и израђен први план и програм за ову област. Нови предмет су студенти Медицинског факултета Универзитета у Љубљани добро прихватили, међутим, недостајала је свеобухватна анализа плана и програма.

**Циљ рада** Циљ рада је био да се током десетогодишњег периода утврди квалитет наставе заснован на испуњеним очекивањима студената, претходно дефинисаним наставним циљевима и позитивној процени наставе, односно да се утврди да ли су студенти изменили свој став тако да се у избору каријере одреде за породичну медицину.

**Метод рада** Анализирани су резултати две групе упитника које су попунили студенти медицине током школске 1997/1998. и 2006/2007. године.

**Резултати** Очекивања већине студената су испуњена и задовољство се током десет година повећало. Ниво достигнућа у односу на постављене циљеве студирања је висок и током анализираног периода се повећао. Предмет Породична медицина студенти су високо бодовали. Показало се да су план и програм Породичне медицине добро прихваћени и да позитивно утичу на однос студента према овом предмету, међутим, програм још нема утицаја на студенте када је реч о избору каријере.

**Закључак** Ниво достигнућа у постављеним циљевима савладавања наставног градива се повећавао истовремено с богаћењем искуства наставника. Програм је успешно и позитивна утицао на став студената медицине према општој пракси и лекарима опште медицине. Нису, међутим, постигнути успешни резултати када је у питању избор каријере студената за породичну медицину, што је циљ који је вероватно ван нашег утицаја.

**Кључне речи:** план и програм Породичне медицине редовних студија; процена програма; десетогодишњи период; Словенија

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