Teaching about Quality Improvement in Specialist Training for Family Medicine in Slovenia

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SUMMARY

Introduction Quality is a part of curricula in medical schools worldwide. It has a special position in family medicine, because it follows specific rules that are adapted to this discipline. Because of its specificities, teaching quality is even more important to become a part of specialist training curricula.

Objective Our aim was to describe quality improvement in family medicine specialist training curriculum in Slovenia and its practical implications and experiences.

Methods The paper describes the family medicine specialist training curriculum also including the topic on the ways quality improvement. Assignments and research protocols are used to enhance the usage of quality methods in everyday practice. An example of such a research protocol, developed by one of the trainees, is used to illustrate the process. Trainees' evaluations of the quality improvement curriculum are analyzed.

Results In the quality improvement project, 199 patients with arterial hypertension younger than 80 years were included. At the first measurement only 21 patients (10.6%) had their blood pressure within the recommended level. Six months after the quality improvement intervention 77 patients (38.9%) had controlled their blood pressure, a statistically significant improvement ($p<0.001$).

Conclusion Teaching quality in family medicine must be a generic part of specialist training curriculum. The use of specific assignments can underpin the necessity to use methods that follow the principles of modern education. The result of teaching process can be even measured in actual improvement in the quality of care.

Keywords: quality; education; vocational training

INTRODUCTION

Quality of care is a concept that has been introduced into medicine in the past decades. It was the result of criticism of modern medicine, first started by Ivan Illich. As a result of this, the philosophy of quality improvement entered medicine. According to the European definition of family medicine, one of the family doctors' core competencies is the ability of quality assurance [1]. As there is not enough time dedicated to this topic during undergraduate education, the specialist training is the last step in the doctor formal education when there is still time to introduce candidates with concepts and practices of quality improvement.

Within medicine, family medicine is deemed very important because of its role in health care systems and its impact on health outcomes. Additionally, family medicine has its specificities that are reflected in the quality of care as well. The specific characteristics of family medicine have been well described in the European definition of family medicine [1]. Because of that, family medicine also has a need for a specific form of training. The key characteristics of family medicine specialist training have been laid out by EURACT (European Academy of Teachers in General Practice/Family Medicine) in the framework for family medicine teaching, called the Teaching agenda [2]. The practical implications of these principles can also be observed in some EU (European Union) directives that specify that half of training has to be family practice based [3]. During this period, courses on several generic aspects of family practice should be applied to pull together practice experience, practical skills, abstract concepts and theoretical knowledge as a part of adult learning cycle [4].

Specialist training for family medicine in Slovenia has tried to follow these principles. It has been developed on the ground of modern educational theories [5] and its practical applications during EURACT Bled courses [6, 7]. Quality improvement teaching plays a prominent role within the specialist training [8]. The aim of teaching is to prepare trainees for future continuing professional development and continuing quality improvement.

Although recently many family medicine curricula have been introduced throughout Europe and specialist training for family medicine has become a standard, the actual content and time frame of introducing these principles has been unclear. Unfortunately, little is known about the content and outcomes of teaching activities during specialist training in Europe.

Family medicine specialist training has a long tradition in Slovenia. Postgraduate training for general practitioners was organized at the Andrija Štampar School of Public Health, Zagreb School of Medicine in Croatia, which at that time used to be like Slovenian one out

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of six of constitutional republics of Yugoslav Federation. This training was the first of its kind in the world and few Slovenian general practitioners started their training there [9]. The first Slovenian general practitioner completed specialist training in 1966 and taking into account knowledge and experiences from Zagreb in the same year postgraduate specialist training for general practitioners was also introduced in Slovenia [10, 11]. The main shortcoming of the program was the fact that it was not mandatory for practicing general practice and thus only half of doctors working in general practices finished specialist training in the period from 1996 until 2000. The situation in other Yugoslav republics was even worse, because the managers have not seen any incentive in paying more for trained doctors who provided the same range of services as untrained ones. On the other hand, it was possible to practice medicine independently without specific training.

In 2000, Slovenia has introduced a new program of specialist training that followed the modern principles of specialist training in Europe. As a part of the reform, new concepts have been introduced and quality improvement was one of them. The description of specialist training scheme is described in details elsewhere [12]. The basic principle of specialist training is to combine practical experiences with theoretical teaching. Two years of the family practice based learning program is divided into 20 courses.

OBJECTIVE

The aim of this paper is to explore family practice specialist training curriculum regarding teaching quality improvement in order to improve its quality in the future.

METHODS

We have made the content overview of the curriculum regarding teaching quality, an overview of trainees' satisfaction with the quality improvement course and have also analyzed one of the student's quality improvement projects in order to illustrate learning and clinical gain of teaching curriculum.

Content overview of quality curriculum

A detailed description of specialist training curriculum is described in details elsewhere [12]. In brief, 20 courses cover generic aspects of family practice, which cannot be covered during clinical rotations at hospitals. During the training period trainees work under tutorship of their tutors in regular family practices and for two days per month they attend a series of courses at the Family Practice Department. The basic structure of a course is threefold; an introductory part at the Department, an assignment during practice attachment and after 4 weeks a feed-back part at the Department. Approximately 30 trainees are enrolled in one modular group.

An overview of satisfaction scores

Satisfaction is measured at the end of each course. Trainees assess the quality of the course according to its scientific merits, teaching quality and its practice usefulness on a scale of 1 to 10. They also evaluate each theme of the course separately according to its quality and usefulness using the five-point Likert scale [13]. The results are routinely collected and filed. We looked into responses of 36 trainees from one modular group.

A quality improvement project

On the top of monthly assignments trainees have to finish a research project, which can be a research study or a study on quality assessment of care [14], evaluation of the level of compliance with practice guidelines or a study of a quality improvement project [15]. In our case a trainee (Igor Mihailović – IM) decided that the management of hypertension is a problem in his practice. The decision was based on a critical analysis of the data from a nationwide project of improving quality of the management of hypertension [16, 17]. In this survey, the trainee obtained one of the worst results on a national sample. From the literature and personal experience, he identified patients' adherence to treatment as the most likely source of bad outcomes.

Because of that, the trainee (IM) and his tutor (Marija Petek Šter – MPS) developed a project on the improvement of the situation with the aim to reach the level of 40% of treated hypertensive patients within the target range, which has been found in a nationwide survey on hypertension management [18]. The study was approved by the national ethics committee. One hundred ninety-nine consecutive patients with arterial hypertension younger than 80 years who visited private practice of Igor Mihailović in Radlje ob Dravi between April and December 2008 and agreed to participate were included in the study.

We introduced intervention and performed three measurements; initial or baseline, immediately after the intervention and follow-up measurement. The intervention was the combination of different measures; advice about necessary lifestyle changes (like regular physical activity, reduce weight, diet changes including salt reduction), recommendation for home blood pressure monitoring, intensification of drug treatment (if appropriate) and including nurse in the management of hypertension (measuring blood pressure in the office, giving advice about non-pharmacological measures in controlling hypertension and taking care about the follow-up visits). Check-ups were done after three and six months.

The following interventions were introduced in the practice:

The review of the patients' records was a starting point in identifying the problems. The intervention was done as a session of lifestyle advice that included [19]:

- Advice on weight reduction when necessary;
- Advice on exercise (almost all days of the week, but at least three times per week, at least 30 minutes of aerobic

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physical activity per day. Recommended activities: walking, jogging, cycling or swimming);
- Advice on eating habits, especially salt (the intake should be balanced with the needs, the proportion of fat should be between 15-30%, the proportion of proteins between 10-15% and carbon hydrate between 55-75%. The intake of cholesterol should be reduced in patients with dyslipidemia to 200 *mg*/day. Diet should include fruits and vegetables, at least 2-3 portions per day. Salt should be reduced to 5 g (one teaspoon) per day. Diet should include at least three meals per day;
- Advice on smoking cessation when necessary;
- Advice on alcohol consumption (limited to 20 g of alcohol per day for male and 10 g per woman. 10 g of alcohol: 1 deciliter of vine or half of bottle of beer).

The session also included checking of blood pressure and review of drug treatment for hypertension, checking of other medical therapies, especially NSAIDs (non-steroid anti-inflammatory drugs).

Home blood pressure measurements were suggested and if white coat hypertension was suspected, 24-hours non-invasive blood pressure monitoring was suggested.

Controls for follow-up were done by a nurse, who was included in the management of hypertensive patients.

Statistical analyses

Qualitative data from the curriculum are discussed in line with the European Definition of General Practice and EURACT educational agenda [1, 2]. Data on satisfaction scores and from quality improvement project were entered into a computer, and distribution and frequencies tabulated.

SPSS statistical software (version 18.0) was used for all statistical analyses. Methods of descriptive statistics were performed to evaluate blood pressure values and the proportion of patients with controlled blood pressure. We used mean and standard deviation (SD), numbers and percentages, t-test for two independent samples and paired t-test to identify statistically significant differences between dependent samples. The level of significance was set to $p<0.05$.

The study was approved by the National Ethical Committee on 4th April 2008.

RESULTS

Overview of the curriculum

Family practice training curriculum covers 20 primary care areas. We found three courses relevant for quality improvement, i.e. courses on Primary Care Research, Evidence Based Practice and Quality of Care. The course specific to quality of care is divided into three parts. In the introductory meeting the basic principles of quality, quality assessment, quality improvement, guidelines development and the assignment are presented. Trainees have four weeks to complete their assignments on a chosen quality topic. Teachers stimulate trainees to assess their own work in several domains and aspects of care, i.e. prescribing, referrals, home care, prevention, chronic patient care, etc. and compare it to the standards derived from the guidelines. Trainees usually observe their own practice and assess it. Their assessments are reported back during the second meeting, when also feed-back takes part. Discussions with experienced family physicians in the role of teachers reinforce new knowledge in trainees.

During the Evidence Based Practice course trainees learn about the quality of scientific information, its sources and assessment of its quality. They acquire skills needed to search the data they need in everyday practice with a special emphasize on the quality of published guidelines.

As a part of the Primary Care Research course trainees also have to run a small clinical study, survey or quality improvement project. It can be a study on the quality assessment of care, compliance with the guidelines or even research project on the quality improvement cycle.

Quality improvement course satisfaction scores

The course on the quality improvement always receives high scores, especially presentations of guidelines for common clinical aspects of family practice work. The analysis was made of a modular group of trainees, where 25 out of 36 students responded (69.4% response rate). The scores for the perceived usefulness and quality of the courses are summarized in Table 1.

Presentations of guidelines for the common clinical aspects of family practice work received the highest scores. Beside the usual comments about the length, availability of presented materials on the Web, the trainees made two important comments on the quality of care course: "The introductory lecture about quality assurance in family practice was presented too theoretically without showing immediate practice implication." and "There were too many lectures and not enough time was given for problem oriented discussion."

Results from quality improvement research project

There were 199 patients included in the research; 110 (55.3%) male and 89 (44.7%) female patients. The average age of participants was 58.9 years (from 33 to 80, SD 9.7 years). Forty-nine (24.8%) patients had already established cardiovascular disease. The proportions of patients with additional risk factors are presented in Table 2.

Table 1. Results of evaluation of the course

Parameter	Points	Range
Course in total	8.0	(1-10)
Usefulness of the topics for everyday practice	4.1	(1-5)
Quality of the course delivery	4.1	(1-5)

A very high proportion of patients with arterial hypertension performed minimal work-up for hypertension according to the recommendation of the national guidelines [19] over the last five years (Table 3), and only 10.6% of patients had their blood pressure controlled (blood pressure less than 130/80 mm Hg in patients with diabetes or renal disease and less than 140/90 mm Hg in other patients with hypertension).

The most frequent intervention for improving blood pressure control was advice on non-pharmacological measures, i.e. in 135 (67.8%) patients, recommendation for regular home blood pressure monitoring was given to 82 (41.3%) and advice on blood pressure controls by the nurse in the office after three and six months in 82 (41.3%) patients. A detailed list of measures for improving blood pressure control is presented in Table 4.

Management of hypertension was not changed in 39 (19.6%) of patients.

At the first measurement mean systolic pressure was 148.8 mm Hg and mean diastolic 94.8 mm Hg, only 21 (10.6%) of the patients had their blood pressure within the recommended levels (Table 5). Three months after introduction of closer monitoring blood pressure values and more intensive medication there were 57.3% of patients with blood pressure readings within the recommended levels and 50.5% six months after the initiation of the quality improvement project. Both mean systolic pressure (138.5 mm Hg) and mean diastolic pressure (84.4 mm Hg), were considerably lower than at the beginning of the quality intervention.

With the intervention we improved blood pressure control of systolic and diastolic blood pressure control in 64 patients after three months and in 60 patients after six months. The proportion of patients with target blood pressure after three months ($t=8.903$; $p<0.001$) and six months ($t=8.011$; $p<0.001$) was statistically significantly higher than at the beginning of the research. The proportion of patients who reached target blood pressure after three and six months was not statistically significant ($t=0.470$; $p=0.639$).

Table 2. Additional risk factors in patients with hypertension

Risk factor	Number of patient with additional risk factors (proportion)
Diabetes	32 (16.3%)
Dyslipidemia	109 (54.8%)
Smoking	46 (23.3%)
Overweight	79 (39.6%)
Obesitiy	94 (47.0%)

Table 3. Proportion of patients with performed each of the elements of minimal work up of hypertension over the last five years

Element of minimal work-up	Number of patients (proportion)
Anamnesis	199 (100%)
Smoking status	199 (100%)
Body mass index	199 (100%)
Blood sugar	199 (100%)
Total cholesterol	199 (100%)
Creatinin	193 (97.0%)
Mikroalbuminuria	107 (53.8%)
EKG	199 (100%)
Eye-ground examination	128 (64.3%)
Assessed cardiovascular risk	190 (95.0%)

Table 4. Measures for improving blood pressure control (in each patient more than one measure should be used)

Measure for improving blood pressure control	Number of patients (proportion)
Advice on changing lifestyle	135 (67.8%)
Change antihypertensive drug	19 (9.8%)
Add additional antihypertensive drug	43 (21.8%)
Increase the dosage of antihypertensive drug	15 (7.8%)
Advice on home blood pressure measurement	82 (41.3%)
24-hours non-invasive blood pressure monitoring	5 (2.8%)
Blood pressure measurements by nurse	82 (41.3%)
Non-steroidal anti-inflammatory drugs removal	17 (8.8%)
Other measures	8 (4.3%)
No changes in management	39 (19.8%)

Table 5. Patients' distribution (N=199) according to blood pressure targets

Blood pressure	Number of patients before intervention	Number of patients 3 months after intervention	Number of patients 6 months after intervention
Systolic	49 (24.6%)	114 (57.3%)	98 (50.5 %)
Diastolic	41 (20.1%)	99 (49.7%)	112 (56.6 %)
Both	21 (10.6%)	77 (38.7%)	77 (38.9%)

DISCUSSION

Discussion on teaching curriculum

The content of family medicine specialist training curriculum is in line with the European Definition of General Practice and EURACT educational agenda [1, 2], thus giving enough time to get basic knowledge and practice some skills on quality improvement. Four weeks time is sufficient only for assessing some aspects on patients' care. The benefit is that assignment topics from other courses are also frequently used for quality assessment purposes. Thus, trainees can develop adequate skills in monitoring the quality of care in their practice. On the other hand, four weeks are not sufficient for a meaningful quality improvement project.

Discussion on teaching quality course

The hallmark of the curriculum is to start with theory, which is then developed further in practice. We are facing high satisfaction with practice oriented topics and some dissatisfaction with more theoretical parts of teaching. High satisfaction with guidelines presentation, which offers useful information on clinical practice, has been reported. Trainees are also satisfied with discussion on presented cases. In a way, this is expected from the trainees who are at the beginning of their professional careers and whose prime focus is on everyday work with patients. They are looking for recipes, how to handle overflow of information

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in highly demanding populations. The course should help the trainees recognize the necessity of acquiring quality improvement skills as an investment for the future. This is one of the major challenges for the future of specialist training. Adult learning demands novel approaches in teaching, especially in areas, which are in the eyes of learners not immediately as applicable in everyday practice as straightforward clinical subjects. In designing the course, teachers need to be able to use approaches and methods flexibly and creatively in order to achieve positive results [20].

Some trainees take the proposed opportunity to assess and measure improvement of their practice. They found home assignments in which they assessed the tutors' offices according to the standard as useful. Only after using quality methods in practice trainees can experience the benefits of quality improvement course.

Discussion on quality improvement project

Quality improvement project followed four steps of PDCA cycle (plan–do–check–act, or Deming circle). The trainee participated in a national quality assessment campaign, which ranked his management of hypertension rather low on the list of Slovenian family doctors. These gave him a trigger to select management of hypertension as the topic for his quality improvement project. National guidelines [19] and a nationwide study on the management of hypertension in family practice [18] served him as a benchmark in setting targets while assessing the quality of care of hypertensive patients in his practice. Patients' records served as a source for data collection. Analysis showed bellow benchmark numbers of patients who reached target blood pressure values (10.6%) in the trainees practice. Recommendations from the guidelines were used for tailoring quality improvement interventions, i.e. counseling non-pharmacological treatment, life-style modification, individual adjustments of drug therapies, use of home blood pressure measurements, which is already widespread in Slovenian patients with hypertension [21] and 24-hours ambulatory blood pressure monitoring. He has set the quality target at 40% of hypertensive patients having their blood pressure readings in the target interval. Follow-up of patients was scheduled more rigorously every 3-6 months, with an option to have even more blood pressure readings with the practice nurse. Quality cycle proved to be successful in asthma patients' follow-up [22] and in more rational prescribing [23]. After six months there were 38.9 % of hypertensive patients having their blood pressure readings in the target interval, which was still below our target, but we could demonstrate a positive change after applying quality methodology in everyday practice of a trainee. The next step could be a new cycle of activities to improve care of hypertensive patients or selection of new emerging quality topic [15].

The example of the case of arterial hypertension shows that if a trainee follows the program correctly, major changes in practice organization are possible with immediate effects on patient care [24].

The lessons learnt from this example for the trainee were:

- Arterial hypertension management can be improved;
- Careful adherence to the National Guidelines in performing diagnostic procedures is not sufficient to yield outcome (blood pressure control);
- Management should be adapted to the individual patient;
- Teamwork is important.

These messages were transferred later to the other trainees of the group, who could then profit from this experience, rather than from a theoretical lecture.

CONCLUSION

Slovenian curriculum for family practice specialist training covers items on quality improvement. Experience on combining theory and practice proved to be a valuable tool in teaching trainees quality improvement. One of the main obstacles in bringing quality improvement projects into practice during specialist training curriculum is a short time span between meetings at the department. Combining quality improvement and research showed good results both in teaching terms of adopting quality improvement and research skills as well real practice improvement, which is the main aim of any education. We should look at family practice specialist training curricula in greater depth and probably change the structure of assignments to allow trainees to change from being just observant to project participants, using the quality circle as a wheel of change, thus preparing our future family medicine specialists to cope with continuing scientific changes in medicine and demands toward reaching different targets imposed by science, policy maker or public.

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Настава о унапређењу квалитета за лекаре на специјализацији породичне медицине у Словенији

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КРАТАК САДРЖАЈ

Увод Квалитет је део наставног програма медицинских факултета у читавом свету. Он заузима посебно место у породичној медицини, јер прати специфична правила прихваћена у оквиру ове дисциплине. С обзиром на своје особености, још је значајније да квалитет наставе постане део наставног програма специјализације из ове области.

Циљ рада Циљ рада је био да се опише унапређење квалитета наставног програма специјализације породичне медицине у Словенији, те укаже на њене практичне импликације и стечена искуства.

Методе рада У раду се описује наставни програм специјализације породичне медицине који такође обухвата тему о начинима побољшања квалитета. Користе се наставни задаци и истраживачки протоколи да би се у свакодневној пракси подстакла примена квалитетних метода. Наводи се пример једног таквог истраживачког протокола који је сачинио један специјализант, како би се илустровао сам процес његове израде. Анализира се процена специјализаната наставног програма о унапређењу квалитета.

Резултати Пројекат о унапређењу квалитета обухватио је 199 особа оболелих од артеријске хипертензије који су били млађи од 80 година. При првом мерењу само 21 испитаник (10,8%) је имао крвни притисак у оквиру препоручених вредности. Након унапређења квалитета, код 77 испитаника (38,9%) крвни притисак је био у оквиру препоручених вредности, што је био статистички значајан напредак (p<0,001).

Закључак Квалитетна настава из породичне медицине мора да буде саставни део специјалистичког наставног програма којим ће се утемељити потреба примене метода које прате принципе савременог образовања. Резултати наставног процеса могу, штавише, да се мере на основу постигнутог унапређења квалитета здравствене неге.

Кључне речи: квалитет; едукација; стручна настава

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