

Full Length Research Paper

How to improve the curricula to achieve job competence of the medical practice

Pranjić Nurka¹, Pranjić Anja² and Sanda Kreitmayer³

¹Department of Public Health, Course of Occupational Health, Medical School University of Tuzla, 75 000 Tuzla, Bosnia and Herzegovina

²Postgraduate study student, Faculty of Economics University of Tuzla, 75 000 Tuzla, Bosnia and Herzegovina

³Educational Centre of Family Medicine; Tuzla Primary Health Care Home, Albina Herljevića 1, 75 000 Tuzla, Bosnia and Herzegovina

Accepted 15 August, 2016

The main task of the undergraduate medical education program is to educate professionally competent physicians for the needs of the public health care system. The aim of this study was to assess the outcomes of traditional undergraduate curricula in relationship to achieve job competencies in medical practice among students and teaching staff and young physicians who are employed in public health sector; and to determine factors which are important for curricula improvement. The study sample (case study research design) consisted of 316 participants (122 men and 194, 61% women): 129 young general practice physicians with <5 years of working experience in public health institutions and 187 active participants of teaching process (133 students of higher years (from III to VI study years) of medical graduate curricula +54 teaching staff). We used self-created Questionnaire about competencies, which was concluded 25 core competencies for physician's occupation. Data analysis was performed using SPSS version 19.0. From 88 to 97% of all participants recognized all of 25 core competencies as important in education. On the other hand the health care management skill was not recognized as important of participants (30-54% answered as necessary). The assessment with linear regression analysis where selected variable was "it is essential to include continued lifelong education", determined courses to better develop competencies: communication skills, team working, evidence based medicine, management of stress at workplace, health promotion and health management with organization of work. Study results could be used as tool for assessment curricula methods and determination of program improvement methods.

Keywords: curricula, learning outcomes, competencies, outcome- based education, physicians

INTRODUCTION

The reality in which we live is essentially different from the one in which we grew up and were educated in, so it's difficult to cope with the upcoming changes. Globalization and modern society are characterized by increasing demands of the workplace. Traditionally, the basic conditions for the physician medical practice were consciousness, knowledge and skills. "The Bologna

family medical schools" has different approach and goals to develop professional competence of medical students for needs of public health care system and physicians with clinical practice experiences that are based on evidence of good practice in medicine. Also, students should already be developing research skills in early years of studies and abilities for continuous medical education (Spady, 1994).

Over the past four decades there have been several attempts to move to the outcome-based education. These attempts include competence- based education,

*Corresponding Author E-mail: pranicnurka@hotmail.com

criterion-referenced learning and postgraduate learning, which focused on competences or criterion levels of performance that are achieved by carefully sequenced teaching (Aguinis et al., 1996). Other ideas and terms attached to outcome-based education include authentic assessment and interdisciplinary outcomes (Van den Berg and Hofman, 2005; Harden, 2007; Spady, 2007).

Outcome-based education has come to be characterized by: development of clearly defined learning outcomes that must be achieved before the end of the course; design of a curriculum, learning strategies and learning opportunities to ensure the achievement of the learning outcomes; an assessment process which matches the learning outcomes and the assessment of progress of individual students to assess if they have achieved defined outcomes (Harden, 2007; Spady, 2007; Strauss and Volkwein, 2004).

In line with the new philosophy, the goal of the medical school is to train physicians who are also responsible for clinical specialists and experts in biomedical and clinical research and administration (competent professionals). The goal for new physicians is have professional and thorough insight to the treatment of the patient in which scientific thinking and knowledge about the behavior and ethics are integrated with clinical knowledge. Faculty, as part of a new culture of teaching, recognizes the central role of the student in planning and developing the curriculum, and therefore is firmly committed to vocational education students (Bologna Declaration, 1999; World Federation for Medical Education Task Force, 2000). Medical education tends to educate physicians who are trained to think scientifically link medical and theoretical knowledge with practical skills. In order to improve the health of individuals and communities it is indispensable for future physicians acquire communication skills, the knowledge and skills needed in clinical practice, but also the way to manage emotions and values of everyday practice, and to learn to cope with stress at work. The relevance means a degree has become of the curriculum (Bologna Declaration, 1999).

Competence is necessary for having the abilities, authority, skills and knowledge. Being competent means making usable acquired knowledge and skills and putting them into practice when necessary and appropriate based on circumstances (World Federation for Medical Education Task Force, 2000; World Health Organization/ Education Commission for foreign medical graduates, 1995).

General principles for improving the quality of medical education are: to prepare physicians for needs and expectations of society, to cope with the explosion of medical knowledge and technology, to teach doctors about the need for lifelong learning, training professionals in new information technologies, medical education to adapt to changed conditions of healthcare services. Physicians should have communication skills to be

competent for a very complex process in health care delivery (Pohjonen, 2001; Pranjic et al., 2012).

The aim was to discover the competencies that are insufficiently taught in medical school which are assessed by young physicians and senior year students and teachers of medical school; assess competencies that could be included in the new reformed curriculum in medical school; recommend the factors which are important for curriculum improvement.

METHODS

The study included 316 subjects divided in two groups; medical school group of 187 subjects of the teaching process (133 graduate student of medical school from third to sixth years of study and 54 teachers in the rank of assistant, senior assistant, professors) and public health group of 129 physicians, employed as general practitioner with <5 years of work experience. According to the gender distribution were 122 males (61% were females) study subjects. Research was conducted at the Medical Faculty of the University of Tuzla and Primary health care Institutions in Tuzla Canton, in 2010. The participation in the survey regarded the requirement of voluntariness. The response rate of public health group was 92%, and the response rate of medical school group 73%.

The research was focused on the identification of learning outcomes. Learning outcomes are defined as knowledge, skills and competences that a person has acquired through learning, which have been proved after learning process. Level qualifications or learning outcomes indicate the complexity and scope of the acquired competences, and describes a set of measurable indicators (Spady, 1994; Aguinis et al., 1996; Strauss and Volkwein, 2004). The study was conducted by giving questionnaires.

The questionnaire about basic competencies of physicians needed in medical practice was created on the basis data in similar studies in the European Union (González and Wagenaar, 2003; Wagenaar and González, 2003; Rabinowitz et al., 2001; Hojat et al., 2002). In its introduction questionnaire contains individual and demographic data. In the second part of the questionnaire a scale made of 25 questions related to the learning outcomes and competencies was placed. The first 5 questions are related to basic medical knowledge and skills focused on the patient: taking the disease history, conducting a physical examination, the ability of the clinical assessment and decision-making, consultation and assessment of the patient's mental status. The sixth part of the questionnaire relates to competency assessment severity of clinical signs and diagnostic procedures, establishing a differential diagnosis, management and treatment plan / rehabilitation program. The seventh part is represented

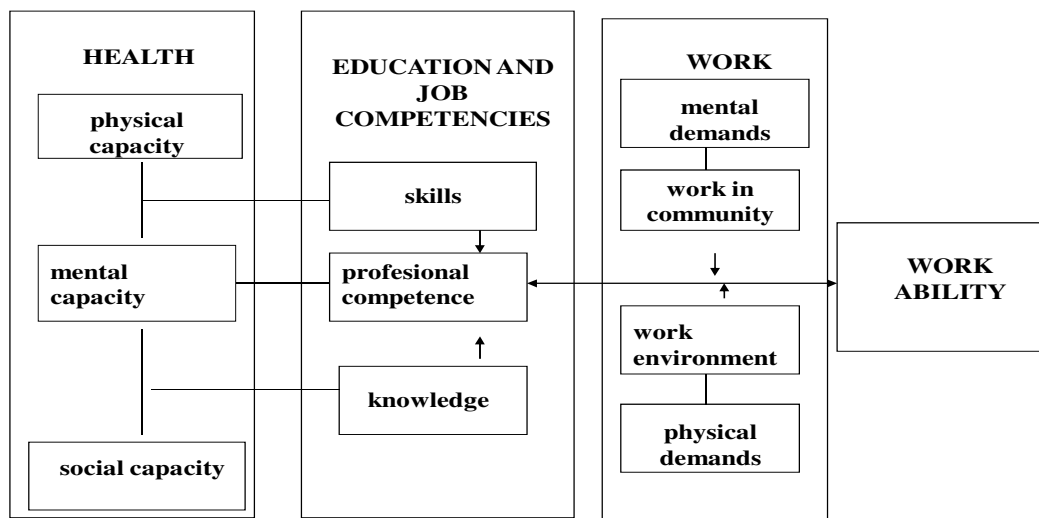


Figure 1. A conceptual model of job skills which reflects the interaction between the determinants of health, acquired and individual capacities, knowledge and skills (training and competence) and the requirements and characteristics of the work/ study environment

Table 1. Distribution of respondents according to assessment of teaching competence during the study expressed self-responses (implemented, not implemented) of medical school group participants (133 students and 54 teachers of the medical faculty, n = 187)

Scale of competencies	Implementation during the undergraduate study (n=187) No. (%)	
	implemented	not implemented
Take a medical history	181 (97)	6 (3)
Carry out physical examination	181 (97)	6 (3)
To make differential diagnosis	129 (69)	58 (31)
Provide explanation and advice	121 (65)	66 (35)
Assess the patient's mental state	142 (76)	45 (24)
Make clinical judgements and decisions	148 (79)	39 (21)
Recognise acute medical emergencies and provide basic first aid	149 (80)	38 (20)
Prescribe clearly and appropriate drugs	138 (74)	49 (26)
Carry out practical procedures	120 (64)	67 (36)
Ability to communicate effectively in a medical context (with patient, colleagues, disable people...)	98 (52)	89 (48)
To assess psychological and social aspects of a patient's disease	124 (66)	63 (34)
Apply the principles, skills and knowledge of evidence- based medicine	93 (50)	94 (50)
Work effectively in a health care system	85 (45)	102 (55)
Engage with population health	103 (55)	84 (45)
Ability to recognise limits and ask for help	113 (60)	74 (40)
Ability to work autonomously when necessary	102 (54)	85 (45)
Ability to solve problems	111 (59)	76 (41)
Ability to make decisions	107 (57)	80 (43)
Ability to work in multidisciplinary team	105 (56)	82 (44)
Ability to manage with workplace stress	99 (53)	88 (47)
Ability to communicate with experts in other disciplines	94 (50)	93 (50)
Ability to lead others	79 (42)	108 (58)
Capacity to learn including lifelong learning	111 (59)	76 (41)
Capacity to applying knowledge in practice	121 (65)	66 (35)
Capacity for organisation and planning	92 (49)	95 (51)

Table 2. Distribution of respondents according to the assessment of teaching competence during the study expressed self-responses (implemented, not implemented) of primary health group participants (young physicians, n=129)

Scale of competencies	Implementation during the undergraduate study (n=129) No. (%)	
	implemented	not implemented
Take a medical history	116 (90)	13 (10)
Carry out physical examination	122 (95)	7 (5)
To make differential diagnosis	85 (66)	44 (34)
Provide explanation and advice	87 (67)	42 (33)
Assess the patient's mental state	80 (62)	49 (38)
Make clinical judgements and decisions	106 (82)	23 (18)
Recognise acute medical emergencies and provide basic first aid	113 (88)	16 (12)
Prescribe clearly and appropriate drugs	99 (77)	30 (23)
Carry out practical procedures	85 (66)	44 (34)
Ability to communicate effectively in a medical context (with patient, colleagues, disable people...)	71 (55)	58 (45)
To assess psychological and social aspects of a patient's disease	66 (51)	63 (49)
Apply the principles, skills and knowledge of evidence-based medicine	52 (40)	77 (60)
Work effectively in a health care system	56 (43)	73 (57)
Engage with population health	90 (70)	39 (30)
Ability to recognise limits and ask for help	62 (48)	67 (52)
Ability to work autonomously when necessary	73 (57)	56 (43)
Ability to solve problems	74 (57)	55 (43)
Ability to make decisions	73 (57)	56 (43)
Ability to work in multidisciplinary team	62 (48)	67 (52)
Ability to manage with workplace stress	69 (53)	60 (47)
Ability to communicate with experts in other disciplines	52 (40)	77 (60)
Ability to lead others	42 (33)	87 (67)
Capacity to learn including lifelong learning	62 (48)	67 (52)
Capacity to applying knowledge in practice	83 (64)	46 (36)
Capacity for organisation and planning	60 (47)	69 (53)

by competency skills in emergency medical aid and resuscitation. The next part contains questions about the ability of drug prescribing. The ninth part assesses the performance of basic skills in practical procedures in medicine such as measuring blood pressure and doing venous puncture, introducing venous cannula, giving intravenous therapy and using infusion, administering intramuscular and subcutaneous injection, administering oxygen, safely handling patient and safely moving patient, managing acid-base status of the patient, interpreting urinalysis, electrocardiogram understanding, managing with spirometry or peakflowmetry and implementing catheterization to the bladder. Tenth part relates to the ability of effective communication with patients and colleagues, relatives of patients, disabled patients and modes of communication in the case of sharing bad news. The eleventh part of the scale are the questions of competency skills assessment of psychological and social aspects of the patient's illness, and assessment of factors that may be associated with the disease, assessment of social factors that influence health, and eventual addiction to smoking or other psychoactive substances. In 12th part intends to

investigate research skills and the ability to apply knowledge of evidence-based medicine (EBM), which involves the definition of the problem and performing an appropriate plan, literature searches and critical reasoning of the published medical literature. Thirteenth part relates to the management of occupational hazards of workplace or work effectively in the health care system. It requires skill to recognize their own health needs and to ensure that their health does not interfere with professional responsibilities. The fourteenth part is devoted to the ability to participate in health promotion to community / society / population.

Evaluation of managerial skills in healthcare driven emotional intelligence (the ability to know their own limits, the ability to work independently, problem solving ability, decision making ability, ability to work in multidisciplinary teams checked in issues from 15 to 19. Twentieth question relates to the management of stress at work; 21st evaluate ability to communicate with other professionals; 22nd leadership ability, the ability 23rd learning, including readiness to teach continuing education taken during their life; 24th refers to the ability to transfer knowledge into practice and 25 assessed the

Table 3. The differences for rankings of competency per the essentials between medical school and primary health care participants

Scale of competencies	Scaling x \pm SD Respondents (n=316)	
	Medical group n= 187	school Prymary health group n=129
Take a medical hystory	1.16 \pm 0.37	1.23 \pm 0.49
Carry out physical examination	1.14 \pm 0.035	1.04 \pm 0.20
To make differential diagnosis	1.45 \pm 0.63	1.22 \pm 0.46
Provide explanation and advice	1.52 \pm 0.62	1.39 \pm 0.48
Assess the patient's mental state	1.56 \pm 0.064	1.49 \pm 0.054*
Make clinical judgements and decisions	1.27 \pm 0.47	1.27 \pm 0.47
Recognise acute medical emergencies and provide basic first aid	1.16 \pm 0.041	1.10 \pm 0.034
Prescribe clearly and appropriate drugs	1.20 \pm 0.40	1.19 \pm 0.41
Carry out practical procedures	1.25 \pm 0.43	1.29 \pm 0.50
Ability to communicate effectively in a medical context (with patient, colleagues, disable people...)	1.52 \pm 0.63	1.44 \pm 0.55*
To assess psychological and social aspects of a patient's disease	1.76 \pm 0.59	1.59 \pm 0.55†
Apply the principles, skills and knowledge of evidence- based medicine	1.81 \pm 0.63	1.64 \pm 0.65†
Work effectively in a health care system	1.67 \pm 0.67	1.56 \pm 0.57*
Engage with population health	1.77 \pm 0.66	1.48 \pm 0.56†
Ability to regognise limits and ask for help	1.60 \pm 0.60	1.43 \pm 0.51†
Ability to work autonomously when necessary	1.59 \pm 0.60	1.44 \pm 0.49*
Ability to solve problems	1.57 \pm 0.58	1.36 \pm 0.50*
Ability to make decisions	1.56 \pm 0.56	1.46 \pm 0.56
Ability to work in multidisciplinary team	1.60 \pm 0.60	1.50 \pm 0.56*
Ability to manage with workplace stress	1.51 \pm 0.55	1.46 \pm 0.52
Ability to communicate with experts in other disciplines	1.56 \pm 0.55	1.59 \pm 0.49
Ability to lead others	1.79 \pm 0.63	1.59 \pm 0.49†
Capacity to learn including lifelong lerning	1.60 \pm 0.57	1.45 \pm 0.50
Capacity to applying knowldge in practice	1.41 \pm 0.53	1.30 \pm 0.56*
Capacity for organisation and planning	1.69 \pm 0.59	1.46 \pm 0.54*

*p<0.05; †p< 0.001, t- test (inversion schedule of Likert's scale; answer 1= necessary)

ability of organizing, planning, project management/ time management.

The part of questionnaire related to competencies contains Likert-type scale responses (inversion order, from 1-4: 1=necessary, 2= substantially, 3= does not matter and 4= irrelevant). Simultaneously, respondents gave an affirmative or negative response about implementation of competencies during the undergraduate study (answered yes or no; implemented, not implemented). In the third part of the questionnaire respondents spoke out about the factors that might influence the outcome of improvement: the need for further and continuing education, the introduction of practical training for acquisition of clinical skills and/ or availability of literature. Factor analysis revealed a relatively satisfactory level of internal consistency (α Cronbach for all questions ladder competences was> 0.75).

Statistical analysis of data

We used t- test to assess the differences between

answers of respondents from medical school and physicians respondents in relation to various competences implemented or not in curricula. Statistical hypotheses were tested at a level of $\alpha = 0.05$. Linear regression analysis of variance (ANOVA) was performed to test association between dependent variable "the need for further and continues education and other competencies as independent variables. The results were presented as regression coefficients β (R), adjusted odds ratio (OR) with 95% confidence intervals (CI), and t values. Statistical analyses were performed with Statistical Package for Social Sciences 19.0 (SPSS, Inc., Chicago, IL, USA).

RESULTS

All the 25 investigated competencies were strongly supported as important in education (responses: necessary and substantially) based on sum of affirmative response (yes is necessary and yes is important) found in 80-90% of all respondents. Respondents of a primary

Table 4 Standardized factor correlations (β) for the dependent variables of scale of competencies in relation to the the need for further and continuing education as dependent variable (n=129), affirmative response used as selected variable of respondents (n=117 of out 129; 91%)

Scale of competencies*† (independent variables)	β	p	95% Confidence interval
Assess the patient's mental state	0.377	0.451	-2.115-4.702
Make clinical judgements and decisions	0.197	0.269	-0.519-1.827
Recognise acute medical emergencies and provide basic first aid	-0.045	0.836	-1.575-1.279
Prescribe clearly and appropriate drugs	0.306	0.311	-1.137-3.518
Carry out practical procedures	0.330	0.296	-0.925-2.992
Ability to communicate effectively in a medical context (with patient, colleagues, disable people...)	-0.814	0.006	-3.412-0.596
To assess psychological and social aspects of a patient's disease	0.353	0.108	-0.194-1.906
Apply the principles, skills and knowledge of evidence- based medicine	0.476	0.054	-0.021-2.516
Work effectively in a health care system	-0.756	0.001	-2.856- -0.745
Engage with population health	-0.212	0.032	-1.432- -0.417
Ability to regognise limits and ask for help	-0.540	0.028	-2.511- -0.149
Ability to work autonomously when necessary	0.521	0.019	0.210- 2.298
Ability to make decisions	0.812	0.054	-0.034- 4.198
Ability to work in multidisciplinary team	1.620	0.001	-1.824-1.162
Ability to communicate with experts in other disciplines	0.074	0.061	-0.873-1.231
Ability to lead others	0.139	0.659	-1.824- 1.162
Capacity to learn including lifelong lerning	-0.501	0.050	-2.407- 0.001
Capacity to applying knowlwdge in practice	0.185	0.333	-0.522- 1.519
Capacity for organisation and planning	-1.215	0.004	-5.054- -0.972

Linear regression analysis

* the need for further and continuing education as dependent variable

†affirmative response as selektion variable

health care institutions group (young physicians) gave more importance to competencies which are in accordance with modern new curricula rather than respondents from medical school: ability to apply the principles, skills and knowledge of evidence- based medicine, ability to make clinical decisions, ability to provide advice to patients, ability to assess mental state of patients, team work ability, ability of health care management, ability to teach and lead and ability to organize. Ninety- one percent of young physicians noted that during their undergraduate study at the medical school independent work was lacking the most, and 76% of them stated that the undergraduate medical education needs more practical training (data not presented).

The medical school group think that following competencies were not implemented enough in curricula: ability to communicate effectively in a medical context, apply the principles, skills and knowledge of evidence-based medicine, work effectively in a health care system, engage to health promotion, ability to recognize limits and ask for help, ability to work autonomously when necessary, ability to solve problems, ability to make decisions, ability to team work, ability to manage with workplace stress and ability to lead others. Self responses of medical students and teaching staff confirm that the characteristics of the traditional curricula at

medical school need to be reformed (Table 1). Frequency of implemented and not implemented skills during undergraduate studies self- reported by young physicians is shown in Table 2.

In Table 3 we ranked competencies and statistically significant differences in attitudes between the groups (medical school group and primary health care group) for the following competencies: assessment of the mental condition of the patient, the ability of effective communication with the patient, assessment of psychological and social status of the patient, the ability application of evidence-based medicine, to work effectively in the health care system, commitment to fostering the health of the population, the ability to recognize their own boundaries, ability to work independently, problem solving ability, ability to work in multidisciplinary teams, leadership ability, the ability to transfer knowledge and to organize and plan ability.

We have discovered significant protectors and instruments for intervention in a primary health care group in order to enrich the curricula in medical schools and conduct ongoing training with the goal for future physicians to acquire the following skills: communication skills, especially in the part of the patient counseling ($\beta = -1146$, $P=0.021$), interpersonal communication skills ($\beta = -0814$, $P= 0.021$), work effectively in the health care

system ($\beta = -0.756$, $P = 0.001$), the ability to recognize their own limits or self-management ($\beta = -0.355$, $P = 0.032$), ability to learn and transfer knowledge ($\beta = -1.146$, $P = 0.021$), ability to make decisions ($\beta = 0.521$, $P = 0.019$); ability for multidisciplinary teamwork ($\beta = 1.620$, $P = 0.0001$), and the ability to organize and plan ($\beta = -1.215$, $P = 0.004$) (Table 4).

DISCUSSION

Medical education tends to train physicians, who are able to think scientifically and link theoretical medical knowledge with practical skills. Curricula should necessarily follow the principles of bioethics education in clinical medicine which is directed towards students as recommended by the Bologna process (Bologna Declaration, 1999; World Federation for Medical Education Task Force, 2000). Students need to facilitate the process of understanding that the patient is still in the middle of all interests. Since 2003 Bosnia and Herzegovina is a formal member of the Bologna process and signatory of the Bologna Declaration (Bokonjić et al., 2009; Boeker et al., 1996).

Ranking basic competences between medical students and doctors-employees in the European Union (EU) revealed a highly significant correlation for 19 of the 25 competencies evaluated. Lowest rate in teaching had two competencies: problem solving, and the ability to organize and plan (Gillon, 1996; Pranjić, 2009). According to the results of our research at the medical school curricula in Tuzla (as well as all of Bosnia and Herzegovina) are still traditional. Although it has been nine years since reform process of higher education has been conducted the results are not measurable. Our study reveals positive results in only few basic competencies (take a medical history, conduct a physical examination to make clinical decisions, assess and identify acute medical urgency and prescribed medication), while other 15 core competencies had about 2 - 2.5 times lower rate in teaching. Four competencies had 3 times lower rate than expected: assessment of mental status of the patients, leadership ability, commitment to fostering the health of the population and the ability to use medicine that is based on evidence from the participants of the teaching process.

Health professionals need to acquire the skills for identifying, gathering information, documenting and reporting of adverse events and those who are escaping (near misses), initial testing of the causes of adverse events (root cause analysis) and analyze the patterns and trends of medical errors (Pranjić, 2009 (a); Šimunović et al., 2008; Stallworth, 2006). New and enhanced skills of physicians that should be induced in new reform curriculum are: synthesizing the evidence and communication of evidence to patients, the use of systems and resources to assist in clinical decision

making (Strauss and Volkwein, 2004). The concept of competencies and skills exclusively reflects individual characteristics of physicians, such as knowledge, attitudes and behaviors, satisfaction and motivation to work (World Federation for Medical Education Task Force, 2000; World Health Organization/ Education Commission for foreign medical graduates, 1995; Pohjonen, 2001) (shown in Figure 1).

However, comparison of ranking essential competencies in the teaching process students reveal significantly lower importance to recognized competencies in relation to physicians. Physicians have recognized the importance of gaining experience in following competencies: assessment of the mental condition of the patient, the ability of effective communicate with the patient, assessment of psychological and social status of the patient, the ability to apply evidence-based medicine (EBM), work effectively in the health care system, have a commitment to improving the health of the population, the ability to recognize their own boundaries, ability to work independently, problem solving ability, decision making ability, ability to work in multidisciplinary teams, leadership ability, the ability to transfer knowledge and capability to organize and plan. Integrating these competencies into teaching process would be necessary as quickly as possible and should be included in the curriculum of the School of Medicine in Tuzla. The results of other authors in the EU highlighted the significant differences between physicians ranking the importance of acquiring competencies for better clinical practice (recognition of its own limits, and decision-making capacity) in relationship to subjects of the teaching process. On the other hand, participants in the teaching process were better in ranking the EMB and research skills, creativity, organizational skills, planning and design (Spady, 2007; Strauss and Volkwein, 2004; Gillon, 1996; Pranjić, 2009; Šimunović et al., 2008; Ebstein, 2002).

CONCLUSION

This research could serve as a pilot project for continuation of ongoing evaluation of curriculum development focused on achieving positive outcomes and competencies. A significant result is that, although efforts are being made to reform the curricula, it is still traditional.

Physicians have always had the same goal: to improve the health of patients through preventative procedures or treatments. Every society needs physicians who have knowledge, skills, who are dedicated to their own patients. But as his position in the society, the tasks that were given to a physician and codes of practice that have been imposed on him changed throughout history (Stallworth, 2006; Helpert, 2003; Newton et al., 2000). At the Medical Faculty in Tuzla it's important to implement

curriculum reform in accordance with the guidelines of the Bologna Declarations and European high-education system, but it should mainly be based on the results of them continuing evaluation of outcomes and competencies. Also, the introduction of new teaching methods, catalog of clinical skills, improve assessment and evaluation of knowledge (judged by the level of competence: practical skills and attitudes) (Hojat et al., 2001; Ebstein, 2002; Wojtczak and Schwarz, 2000; Gionella and Hojat, 2001). Students and teaching staff, as well as physicians in public health sector tend to react positively and support the importance of changes in the curriculum (Bokonjić et al., 2009; Boeker et al., 2009; Pranjic, 2012. In the future a priority should be given to acquiring communication skills, multidisciplinary teamwork, EBM, workplace stress management, health promotion and other aspects of the new public health and health care management.

Conflicts of Interests

None declared.

REFERENCES

- Aguinis H, Nesler MS, Quigley B M, Lee S J, Tedeschi JT (1996). Power bases of faculty supervisors and educational outcomes for graduate students. *JHE*. 67 (3): 267-297.
- Boeker T, Nikendei C, Božić T, Pranjic N (2009). Technical skills training. In: Steiner T, Sonntag HG, Bokonjić D (eds) *Manual of Teaching and Learning in medicine (B&H Medical Faculties within the EU TEMPUS projects DICTUM and INTEL M)*.
- Bokonjić D, Mimica M, Pranjic N, Filipović V, Čosović S, Bosse HM, Huwendiek S, Kirshink M, Skelin S (2009). Problem Based Learning. In: Steiner T, Sonntag HG, Bokonjić D (eds) *Manual of Teaching and Learning in medicine (B&H Medical Faculties within the EU TEMPUS projects DICTUM and INTEL M)*.
- Bologna Declaration (1999). The European Higher Education Area. Joint Declaration of the European Ministers of Education: The Bologna Declaration of 19 June 1999.
- Ebstein H (2002). Professional Competence. *JAMA*. 287:226-35.
- Gillon R (1996). Thinking about a medical school core curriculum for medical ethics and law. *J. Med. Ethics*. 22: 323-324.
- Gonnella JS, Hojat M (2001). Biotechnology and ethics in medical education of the new millennium: physician roles and responsibilities. *Med. Teach*. 23:371-7.
- González J, Wagenaar R (2003). Introduction, Line 1 Generic Competences, Line 2 Subject Specific Competences, Line 3 New Perspectives on ECTS as a Transfer and accumulation System, Line 4 Approaches to Teaching and Learning, Assessment and Performance and Quality, General Conclusions and Recommendations. In: *Tuning Educational Structures in Europe. Final Report- Pilot Project Phase, Groningen and Bilbao, 2003*. 21-55.
- Harden RM (2007). Outcome-based education: The future is today. *Med. Teach*. 29: 625-629.
- Halpern J (2003). What is Clinical Empathy? *J. Gen. Int. Med*. 18: 670-4.
- Hojat M, Gonnella JS, Mangione S, Nasca TJ, Veloski JJ, Erdmann JB, Callahan CA, Magee M (2002). Empathy in medical students as related to academic performance, clinical competence, and gender. *Med. Educ*. 36: 522-7.
- Hojat M, Mangione S, Gonnella JS (2001). Empathy in medical education and patient care (letter). *Acad. Med*. 76:669.
- Newton BW, Savidge MA, Barber L et al (2000). Differences in medical students' empathy. *Acad. Med*. 75: 1215.
- Pohjonen T (2001). Perceived work ability of home care workers in relation to individual and work-related factors in different age groups. *Occup. Med*. 51(3): 209 - 17.
- Pranjic N (2009). Medical error- professional liability for malpractice in Bosnia and Herzegovina. *Liječ Vjesn*. 131(78): 229-32.
- Pranjic N (2009). The education and training in Occupational health in South East Europe Countries and Europe Union. *German Medical Science (gms)* 2008; published 06.04.2009. <http://www.egms.de/en/meetings/grako2008/08grako23.shtml>; accessed 19.04.2009. 1-3 (a).
- Pranjic N, Govaert A, Van Keer C, De Lepeleer G, Kurtić A, Ljuca F, Imamović- Kuluglić M (2012). The establishment of a medical faculty advisory board for the development of curricula, competencies and learning outcomes in Bosnia and Herzegovina. *Educ. Res*. 3(3): 257-63.
- Rabinowitz HK, Babbott D, Bastacky S (2001). Innovative approaches to educating medical students for practice in a changing health care environment: The National UME-21 Project. *Acad. Med*. 76: 587-97.
- Spady WG (1994). Choosing outcomes of significance based education. *Educational Leadership*. 51(6): 18-22.
- Spady WG (2007). The paradigm traps. *Education Week*. 2007. 26 (18): 27-29.
- Stallworth BJ (2006). The Relevance of Young Adult Literature. *Educational Leadership*. 63(7): 59-63.
- Strauss LC, Volkwein JF (2004). Predictors of student commitment at two- year and four-year institutions. *JHE*. 75(2): 203-27.
- Šimunović VJ, Petković M, Miscia S, Petrovic M, Stallaerts R, Busselmaier W, Hebgen M, Horsch A, Horsch S, Krzan M, Svab I, Ribaric S, Zeleznik D, Santa Barbara J, Arapovic D, Bozic T, Duzel G, Ljubic F, Ostojic M, Skocibusic S, Spasojevic N, Zalihić A, Radić R, Mehić B, Nakas-Ićindić E, Kordić D, Sapunar D, Tomić S, Ljuca F, Pranjic N, et al (2008). Short history of just mentorship and support. *Croat. Med. J*. 49(1):18-21.
- Van den Berg MN, Hofman WHA (2005). Student success in university education: A multi-measurement study of the impact of student and faculty factors on study progress. *JHE*. 50(3): 413-16.
- Wagenaar R, González J (2003). Educational Structures, Learning Outcomes, Workload and the Calculation of ECTS Credits'. In: *Tuning Educational Structures in Europe. Final Report- Pilot Project Phase, Groningen and Bilbao, 2003*. 223-46.
- Wojtczak A, Schwarz MR (2000). Minimum essential requirements and standards in medical education. *Med. Teach*. 22(6): 555-9.
- World Federation for Medical Education Task Force (2000) Defining international standards in basic medical education: Report of a Working Party, Copenhagen 1999. *Med. Educ*. 34(8): 665-675.
- World Health Organization/ Education Commission for foreign medical graduates (1995). Towards a global consensus on quality medical education: serving the needs of population and individuals. *Proceedings of the 1994 WHO/ ECFMG Consultation in Geneva, Switzerland*. Acad. Med. 70:7.