



Hospital management training and improvement in managerial skills: Serbian experience

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ABSTRACT

Objectives: The purpose of this study was to analyze the improvement of managerial skills of hospitals' top managers after a specific management training programme, and to explore possible predictors and relations.

Methods: The study was conducted during the years 2006 and 2007 with cohort of 107 managers from 20 Serbian general hospitals. The managers self-assessed the improvement in their managerial skills before and after the training programme.

Results: After the training programme, all managers' skills had improved. The biggest improvement was in the following skills: organizing daily activities, motivating and guiding others, supervising the work of others, group discussion, and situation analysis. The least improved were: applying creative techniques, working well with peers, professional self-development, written communication, and operational planning. Identified predictors of improvement were: shorter years of managerial experience, type of manager, type of profession, and recognizing the importance of the managerial skills in oral communication, evidence-based decision making, and supervising the work of others.

Conclusions: Specific training programme related to strategic management can increase managerial competencies, which are an important source of competitive advantage for organizations.

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1. Introduction

Hospitals are constantly adapting to the challenges of both the external and internal environments such as demo-

graphic and epidemiological transitions, application of new and expensive technologies, changes in health market, and changes in economic conditions as well as constant reforms of the health care systems [1,2]. Managers react to these challenges by modifying and improving hospital management structures and upgrading managerial skills [3,4]. Recent analyses indicate that, above all, hospital management teams have to deal with strategic management tools [5–7]. The common characteristic of these studies is the application of research evidence to improve the state of strategic management, to develop managerial knowledge and to promote managerial skills.

In transitional countries, such as the countries of the South-East Europe (SEE region), health care reforms started

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in 1990. All these countries used to have following common characteristics of their health care systems: highly centralized, financed predominantly via social insurance and taxes, and provided mostly by the public sector or with low participation of private practitioners [8–10]. The need for management improvement in health institutions has been recognized [11–14]. At the same time, these countries established the courses in health management education as an important part of their reforms [15].

In Serbia, the health care system and especially hospital health care, is over-dimensioned, inefficient and expensive [16,17]. In general, Serbian hospitals are characterized by excess physical capacity, cumbersome service delivery systems with high levels of medical interventions inconsistent in clinical quality, staff surpluses, and human resource management problems. In the year 2006, hospital health care was provided by 127 inpatient facilities, of which 40 were general hospitals. The total number of standard hospital beds was 42,835, or 5.78 beds per 1000 population. The average length of stay per patient was 10.3 days, while the average hospital bed-occupancy rate was 72.27% [18]. In many of the cases, hospital performance is not yet at a satisfactory level [19].

Hospital directors were usually physicians of long-standing practice in Serbia without formal hospital management education. In general, as top managers they managed hospitals with low involvement from other level managers (e.g., heads of departments), neglecting the value of multidisciplinary approach and teamwork. According to international experts, planning in hospitals and in other health institutions had no strategic character [16,17,20]. Historically there has not been a multi-departmental approach to health planning. This resulted in the awkward situation where a hospital general manager had to manage a complex hospital institution through considerable change with limited knowledge and skills.

After democratic changes in Serbia in 2000, health care reforms became evidence-based oriented and subject to legislation mandating partial decentralization, wider local autonomy, and contracts between health services and the private sector [21]. Institutional and human resources capacities and management improvements were important for the success of the reforms [16]. The need for systematic interventions for human resources development and management was recognized, including interdisciplinary formal education approach (postgraduate academic programmes and continuing education), study tours, and courses (training) [16,17]. Before then, there were individual initiatives for education in the field of health management, but this was not enough to lead to visible improvement in hospitals and the performance of the health care system as a whole. Supported by international donors, the Serbian Ministry of Health organized trainings for physicians and other professionals in managerial positions who lacked managerial knowledge and skills. In this way, at the state level, management education was recognized as not being the sole responsibility of the individual manager. Training was perceived by the Serbian Ministry of Health as an opportunity to obtain the managerial knowledge and skills, to develop and improve teamwork, organization's culture and unity [22].

1.1. Managerial training and its importance

To be competitive in meeting the numerous environmental challenges, health care organizations must break old habits, attain contemporary way of thinking and modern skills, and develop different leadership and organizational behaviours [23,24]. Thus, some organizations are obtaining competitive advantages through strategic partnerships, others through technological explosions, and most of them through investment in human resources [25,26].

The management education/training is one of the most important sources of competitive advantage in any organization [26]. Formal management education/training is a learning experience designed to help employees gain the proper knowledge and skills needed to meet the environmental challenges [27,28,31]. Certified, formal management training programmes provide accreditation. It is ongoing process in support of organizational growth and advancement, for example, by providing a forum for the communication of organizational strategies, new values, tools, and work performance improvement [29,30].

Other than through management education/training, managers may acquire knowledge through action learning, mentoring, job assignments, on the job experience, and feedback-intensive programs [32]. Expected educational benefits are the development and improvement of current managerial skills, encouragement to think differently about business, and producing new or better ideas and practices that can be applied in the organizations [26,31]. All these could lead to upgraded confidence and the motivating to improve organizational performance.

However, the success of any training depends on whether the manager/physicians were good learners [33], or just interested in management [34], as well as how the management education/training was done [35]. Therefore, a purpose of training evaluation is to systematically collect and analyze information in order to decide on the best way to utilize available training resources to achieve organizational goals [36]. Evaluation is an essential part of the educational process [37] and focuses mostly on cost-benefit analyses or level of happiness indices [40]. Among numerous evaluation models of training programme (model such as that of Tyler's or Hamblin's, response mode, goal-free, scientific, illuminative, realistic, utilization-focused or fourth generation evaluation, and return-on-investment [29,38,39], the most frequently used is the Kirkpatrick evaluation model. The American Society for Training and Development (ASTD) in 2000 reported that 67% of organizations had conducted evaluations using the Kirkpatrick model [41].

The purpose of our study was to analyze the improvement of managerial skills of hospitals' top managers after a specific training programme, and to explore possible predictors and relations. The hypothesis of this research is that since recent attention has been given to management training development in hospitals, a specific training programme would improve particular managerial skills.

2. Method

2.1. Study design

The research was conducted during the years 2006 and 2007 in the Centre – School of Public Health, School of Medicine, University of Belgrade.

The cohort of 107 top managers investigated came from 20 of the 40 Serbian general hospitals (almost 50% of all top managers in Serbian general hospitals). Multidisciplinary management teams, with 5 members on average, consisted of the director of the general hospital, the deputy directors, the head nurse, and chiefs of the health departments and support services.

Hospitals were subjected to the Project for capacity building in 20 Serbian hospitals, and was run by the Ministry of Health of the Republic Serbia and the European Agency for Reconstruction. The selected hospitals had a large number of beds per 1000 population and similar catchment populations, and were equally distributed across Serbia. As the lack of managerial knowledge and skills was obvious, and the Project aimed at capacity building of hospitals management in order to achieve planned improvements of effectiveness and efficiency, the following training programmes were requested: Basic Health Management, Hospital Management, Health Information Management, Total Quality Management, and Change Management [42]. The total number of learning hours per module was 60, of which 20 were contact hours in the classroom and 40 were individual work. Also, the Project used action learning methods (small groups/learning set, set advisers, a problem/task focus, outcomes focusing on real time action, opportunity for reflection for all learners) and tested knowledge and skills at the end of the learning process (such as in performing SWOT analysis, development of strategic objectives).

2.2. Description of the modules

The Basic Health Management module, besides the basic function of management, specifically explored management in healthcare organization and application of strategic management tools. It *aimed* to enable managers to perform basic management functions and strategic and business planning. Managers were empowered to accept responsibility and specific managerial skills (e.g., planning, decision making, communications, conflict resolution, team building and work, setting standards, controlling and leadership). Managers had to demonstrate the ability to apply the skills and to perform strategic planning (situation analysis, SWOT, mission, vision, strategic plan development with forecasting of acceptable risks, and applying evaluation and benchmarking using proper indicators) (Fig. 1). Managers' *tasks* were to develop strategic plans for their hospitals during the period of six months after the training and under the supervision of instructors.

The Hospital Management module *aimed* to build management and leadership capacity for effective hospital management during change, by developing managers' ability both to influence transformation to a modern hospital using basic principles of social marketing and to assess

hospital performance, payment, and organizational modalities. Managers' *tasks* were to develop a selected business case for their hospitals within six months of the training and under the supervision of instructors.

The Health Information Management module provided the basic principles and practices of health care information management and the use of information systems and technology (e.g., European Computer Driving Licence and Web technologies) for organizational performance improvement and technology selection and implementation processes. The module *aimed* to prepare managers for systematic management of hospital information as a key strategic resource of a health organization practice per se and to use information and communication technology to increase individual effectiveness during the managerial process. As a *result* of the module managers should have had increased their skills in health information management.

During the Total Quality Management (TQM) module, managers met the concept of quality and healthcare and how to use assessment tools and to analyze quality indicators and apply tools related to TQM (e.g., the "fishbone diagram", Pareto charts, flow-charts). It *aimed* to improve overall health institution management, and as a *result*, the participants had to show how they improved a selected work process using the TQM method during the next six months.

The last module – Change Management – highlighted the necessary management skills to effect change by exploring the characteristics and tools of a change process (e.g., strategic communication) and the interaction of organizational strategy and organizational culture during the change. The module *aimed* to provide students with skills necessary for effective functioning of the organization during change initiatives when resistance of employees could be expected.

Six months after the training, the management teams had to present strategic plans for their hospitals, business cases, and the results of TQM projects applied in their hospitals.

2.3. Instrument

The managers completed a questionnaire twice during the research. At the beginning of the training programme, they assessed their current level of specific managerial skills in the areas in which they were to receive training. Six months after the last training module, the managers repeated this self-assessment of their managerial skills.

The questionnaires for managerial skills assessment consisted of questions that addressed specific managerial skill and role competence: situational analysis (SA), strategic planning (SP), operational planning (OP), evidence-based decision making (EB), planning, organizing and monitoring progress against plan (POM), organizing daily activities (ODA), time management (TM), oral communication (OC), written communication (WC), group discussions (GD), working well with peers (WWP), motivating and guiding others (MG), supervising the work of others (SW), creating positive atmosphere (CPA), applying creative techniques (ACT), managing change (MC) and

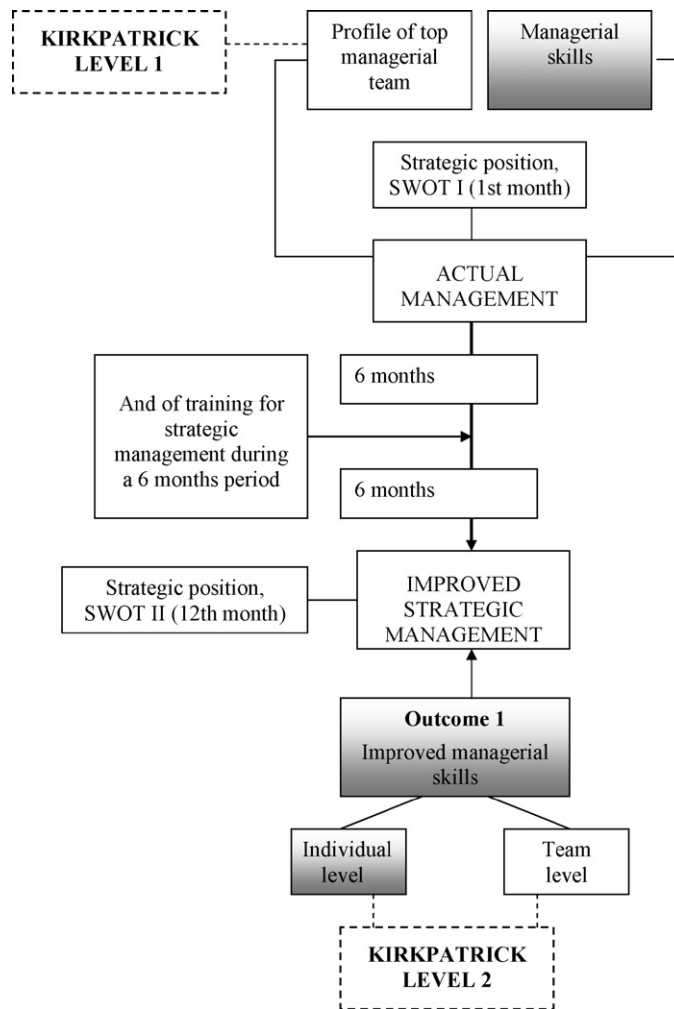


Fig. 1. Model of analysis of research data.

professional self-development (PSD). The responses were measured on a five-point Likert scale where higher values indicated greater improvement. The questionnaire was based on similar research instruments and Kirkpatrick's training evaluation model [43–45]. Kirkpatrick's model was used as basis for analysis through measurement of reactions to training, learning attainment, transfer, and subsequent behaviour and results (Fig. 1).

The questionnaire was pre-tested on five managers to identify potential problems related to formulations, misunderstanding or misinterpretation, and identifying the words or wording that could be inappropriate. Some of the comments were accepted and incorporated in the questionnaire. Pre-testing revealed that the questionnaire was simple and easy to complete in approximately 15 min. The questionnaire also contained a set of sociodemographic and job-related questions.

2.4. Statistical analysis

The continuous variables are expressed as means \pm SD and the categorical variables as frequencies/percentages.

The internal consistency and reliability of scales was tested by Cronbach's alpha coefficient. Reliability was considered acceptable with a Cronbach's alpha coefficient of 0.6 or above [46]. The exploratory factor analysis used principal component (PC) analysis as the extraction method, and varimax rotation with Kaiser normalization, to identify and group 17 variables of the questionnaire by their common dimensions to support construct validity. The principal components were described by variables which were group into two: those with a loading of 0.40–0.60 and those with a loading of 0.60. Variables with a loading higher than 0.60 were considered to have had primary impact, while variables with loading of 0.40–0.60 had secondary impact, and these are generally accepted cut-offs [47,48]. Paired sample *t*-tests were used to test changes in mean scores of managerial skills before and after training. *p*-Values were considered statistically significant if they were less than 0.05. Also paired sample *t*-test and ANOVA were used to compare means of improvement of managerial skills between sex and type of managers. The *p*-values were considered statistically significant if they were less than 0.05. Multiple linear regression analysis was applied

Table 1

Assessment of managerial skills before and after training programme.

Managerial skills	Before training		After training		Mean differences	<i>t</i>
	Mean	SD	Mean	SD		
Situation analysis	3.28	0.87	3.95	0.83	−0.67	−5.86
Strategic planning	3.35	0.85	4.01	0.62	−0.65	−6.76
Operational planning	3.63	0.62	4.03	0.75	−0.40	−4.33
Evidence-based decision making	3.59	0.64	4.17	0.66	−0.57	−6.86
Planning and organizing, monitoring progress against plan	3.46	0.82	3.88	0.91	−0.42	−9.42
Organizing daily activities	3.22	0.84	4.15	0.61	−0.92	−9.42
Time management	3.36	0.85	4.02	0.80	−0.66	−5.51
Oral communication	3.39	0.78	3.98	0.94	−0.58	−4.99
Written communication	3.59	0.63	3.96	0.94	−0.36	−8.81
Group discussions	3.64	0.60	4.16	0.75	−0.76	−8.81
Working well with peers	3.86	0.48	4.14	0.71	−0.28	−3.68
Motivating and guiding others	3.63	0.62	4.52	0.67	−0.88	−10.04
Supervising the work of others	3.37	0.82	4.13	0.68	−0.76	−7.25
Creative positive atmosphere	3.45	0.73	4.11	1.05	−0.66	−5.66
Applying creative techniques	3.59	0.64	3.86	0.74	−0.26	−2.96
Management changing	3.59	0.63	4.09	0.72	−0.49	−6.02
Professional self-development	3.83	0.50	4.13	0.75	−0.29	−3.90

 $p < 0.0005$.

to determine predictors of improvement of managerial skills after the training programme. The predictors come from three different groups: the first related to sociodemographic data (sex, age, years of service, and occupation, i.e. physician, head nurse, lawyer, economist, engineer, and health department/support service member); the second was based on managerial characteristics (type of manager, years of managerial experience, number of supervised employees, and previous training in managerial skills); and the third included assessment of current level of managerial skills before training programme. The significance of each independent variable was determined by the regression coefficient which was accepted if $p < 0.05$. The analysis was performed using PASW Statistics 17.0.

3. Results

A total of 107 managers were included in the research, and they constituted almost half of the total number of top managers in Serbian general hospitals. Manage-

rial teams were composed of clinical physicians (27.1%), economists (21.5%), lawyers (18.7%), engineers (16.8%), and nurses (14.0%). The managerial teams included the following types of managers: directors (13.20%), deputy of directors (20.80%), head nurses (14.20%), and chiefs of health departments and support services (51.90%). The specialists among the physicians came mostly from the fields of surgery (24.3%), and internal medicine (12.6%). The average years of service of the managers was 21.90 ± 7.82 , and the years of managerial experience was 1.07 ± 8.03 . Female managers at the position of director or deputy were represented, forming 30.57% of the sample. More than half of all managers (51.9%) supervised over 100 employees. Almost two-thirds (63.6%) of the managers had managerial training, but without a management degree.

After the training programme, all managers' skills improved, and in particular the following skills: organizing daily activities, motivating and guiding, supervising, group discussions, and situation analysis. Creativity, working well with peers, professional self-development, written

Table 2

Means and standard deviation of self-assessed specific managerial skills after training programme by sex and type of manager.

Managerial skills	Sex		Type of manager			
	Male	Female	Director	Deputy	Head nurse	Chiefs
Situational analysis	3.82 ± 0.88	4.10 ± 0.75	3.93 ± 0.99	4.00 ± 0.76	3.87 ± 0.64	3.98 ± 0.87
Applying creative techniques	3.67 ± 0.74	3.84 ± 0.76	3.86 ± 0.66	3.73 ± 0.63	3.40 ± 0.99	4.02 ± 0.68
Strategic planning	4.02 ± 0.65	4.00 ± 0.60	4.14 ± 0.53	4.09 ± 0.68	3.87 ± 0.52	3.96 ± 0.64
Professional self-development	4.18 ± 0.66	4.08 ± 0.84	4.36 ± 0.75	4.00 ± 0.87	3.80 ± 0.77	4.20 ± 0.67
Planning, organizing and monitoring progress against plan	3.60 ± 0.59	3.32 ± 0.91	3.82 ± 0.40	3.44 ± 0.62	3.10 ± 1.28	3.47 ± 0.72
Motivation and guidance to others	3.75 ± 0.79	3.63 ± 0.96	3.71 ± 0.73	3.59 ± 0.85	3.67 ± 1.11	3.71 ± 0.85
Operational planning	4.07 ± 0.76	3.98 ± 0.73	4.14 ± 0.77	3.82 ± 0.66	3.67 ± 0.82	4.16 ± 0.71
Evidence-based decision making	4.12 ± 0.66	4.22 ± 0.67	4.28 ± 0.47	4.00 ± 0.76	4.00 ± 0.65	4.25 ± 0.67
Organizing daily activities	4.12 ± 0.60	4.17 ± 0.62	4.14 ± 0.53	4.14 ± 0.56	4.00 ± 0.53	4.18 ± 0.67
Time management	4.11 ± 0.75	3.92 ± 0.84	4.07 ± 0.73	3.91 ± 0.87	3.93 ± 0.79	4.07 ± 0.81
Oral communication	3.89 ± 0.91	4.08 ± 0.98	4.14 ± 0.77	3.86 ± 1.32	4.27 ± 0.46	3.89 ± 0.90
Written communication	3.89 ± 0.93	4.04 ± 0.96	4.00 ± 0.87	3.73 ± 1.24	3.93 ± 0.70	4.04 ± 0.88
Group discussions	4.25 ± 0.64	4.33 ± 0.68	4.57 ± 0.51	4.00 ± 0.75	4.20 ± 0.41	4.36 ± 0.67
Working well with peers	4.20 ± 0.75	4.08 ± 0.66	4.50 ± 0.65	4.23 ± 0.61	3.80 ± 0.56	4.11 ± 0.76
Supervising the work of others	4.12 ± 0.60	4.14 ± 0.77	4.14 ± 0.53	4.14 ± 0.64	3.67 ± 1.05	4.24 ± 0.57
Creating positive atmosphere	3.98 ± 1.07	4.25 ± 1.02	4.00 ± 1.04	4.09 ± 1.15	4.27 ± 0.70	4.09 ± 1.11
Managing change	4.12 ± 0.71	4.06 ± 0.73	4.43 ± 0.51	4.23 ± 0.68	3.73 ± 0.70	4.07 ± 0.74

Table 3

The principal component (PC) analysis of managerial skills variables before training programme.

Variables of managerial skills	Before training programme		
	Leadership PC I-1	Daily practice management PC I-2	Data collection and decision making PC I-3
Chronbach' alpha = 0.832			
Professional self-development	0.769		
Working well with peers	0.729		
Oral communication	0.703		
Written communication	0.665		
Group discussions	0.514		
Applying creative technique	0.509		
Management change	0.497		
Supervising the work of others	0.489		
Chronbach' alpha = 0.685			
Organizing daily activities		0.749	
Time management		0.672	
Planning and organizing, monitoring progress against plan			
Strategic planning		0.654	
		0.446	
Chronbach' alpha = 0.727			
Evidence-based decision making			0.763
Motivating and guidance to others			0.664
Operational planning			0.552
Creative positive atmosphere			0.508
Situation analysis			0.482

communication, and operational planning were the least improved skills (Table 1).

After the training programme, there were statistically significant differences between head nurse and chiefs in improving the skills of applying creative techniques ($p=0.004$) and supervising the work of others ($p=0.004$). Head nurses improved in these areas less than other managers. There were significant differences in improving group discussion between directors and deputies ($p=0.011$) and between deputies and chiefs ($p=0.028$).

Directors and chiefs improved this skill to a higher degree than deputies. Similarly, there were significant difference in improving the skill of supervising the work of others between deputies and head nurses ($p=0.038$), and head nurses and chiefs ($p=0.004$). Deputies and other managers improved this skill more than head nurses (Table 2).

A principal component analysis redistributed 17 variables of managerial skills into 3 key managerial tasks (PC) before training (56%), and into 3 others after training (53%) (Tables 3 and 4). Before training, they were leadership

Table 4

The principal component (PC) analysis of managerial skills variables after training programme.

Variables of managerial skills	After training programme		
	Planning against objectives PC II-1	Coordination and organization PC II-2	Communication PC II-3
Chronbach' alpha = 0.731			
Operational planning	0.782		
Motivating and guidance to others	0.752		
Applying creative technique	0.744		
Time management	0.706		
Planning and organizing, monitoring progress against plan	0.593		
Strategic planning	0.548		
Chronbach' alpha = 0.683			
Working well with peers		0.747	
Evidence-based decision making		0.724	
Management change		0.666	
Organizing daily activities		0.616	
Situation analysis		0.552	
Group discussions		0.526	
Supervising the work of others		0.521	
Professional self-development		0.519	
Chronbach' alpha = 0.676			
Oral communication			0.905
Written communication			0.805
Creative positive atmosphere			0.883

Table 5

Characteristics of significant regression models after training programme.

Models		Unstandardized coefficients				Standardized coefficient	95% CI for <i>b</i>	
Dependent variable	Independent variables ^a	Constant	<i>b</i>	SE	<i>p</i>	β	Lower	Upper
Strategic planning		3.524						
	Years of managerial experience		−0.020	0.007	0.005	−0.272	−0.035	−0.006
	Oral communication		0.168	0.074	0.025	0.217	0.021	0.315
Group discussions		3.685						
	Type of manager, all types except deputy director		0.375	0.154	0.016	0.231	0.070	0.681
	Oral communication		0.159	0.078	0.045	0.193	0.004	0.315
Working well with peers		3.120						
	Profession—physician		0.438	0.144	0.003	0.279	0.151	0.724
	Supervising the work of others		0.211	0.079	0.009	0.247	0.055	0.367
Supervising the work of others	All professions except head nurse	4.213	0.547	0.188	0.004	0.277	0.174	0.920
Motivation and guidance to others		2.046						
	Evidence-based decision making		0.382	0.125	0.003	0.285	0.134	0.629
	All professions except economist		0.417	0.197	0.037	0.197	0.026	0.807
Applying creative technique		1.925						
	Evidence-based decision making		0.438	0.103	0.000	0.377	0.234	0.643
	All professions except head nurse		0.512	0.189	0.008	0.240	0.137	0.886

^a Among independent variables which are analyzed: sex, age, department of internal medicine, surgery medicine and common services; profession: lawyer, engineer; type of managers: director, chief; working experience, number of supervised employees, situation analysis, strategic planning, operational planning, planning, organizing and monitoring progress against plan, organizing daily activities, time management, written communication, group discussions, working well with peers, motivation and guidance to others, creating positive atmosphere, applying creative techniques, managing change and professional self-development are not significant predictor.

(PC1), daily practice planning (PC2), and the daily practice management (PC3). After training, they were planning against objectives (PC1), coordination and organization (PC2), and communication (PC3). Before the training the managers had low skills in change management, creativity, and planning with performing external and internal environmental assessment. After training, they have recognized the importance of planning, motivating, and coordinating as creative skills, which they also improved during training. The reliability of each principal component before and after the training programme was identified by Cronbach's Alpha coefficient (Tables 3 and 4) and was higher before than after training.

After the training programme, significant predictors for improvement in the 6 managerial skills were identified (Table 5). There was a relationship between years of managerial experience and improvement of strategic planning skills: more experienced managers had lower improvement ($\beta = -0.272$, $p = 0.005$). Managers who improved oral communication also upgraded their strategic planning skill ($\beta = 0.217$, $p = 0.025$). Group discussion improved in all managerial types except deputy director ($\beta = -0.231$, $p = 0.016$), and the same was true for oral communication ($\beta = 0.193$, $p = 0.045$). Managers who improved oral communication skills also improved group discussion skills. Working well with peers was a positive correlation with physician as profession ($\beta = 0.279$, $p = 0.003$), as was supervision ($\beta = -0.247$, $p = 0.009$). Managers physicians, who improved supervision skills, as also improved skill for working well with peers. There was a negative relationship between ability to supervise the work of others and being a head nurse ($\beta = -0.277$, $p = 0.004$). Head nurses had the least ability in this area. There was a positive relationship between motivating and guiding others and evidence-based decision making ($\beta = 0.285$, $p = 0.003$), and a negative relationship with being an economist ($\beta = -0.197$, $p = 0.037$).

Managers who improved evidence-based decision-making skills also improved motivation and guidance skills but economists improved these less. All managers who improved evidence-based decision also improved creativity but head nurses had less improvement in creativity ($\beta = -0.240$, $p = 0.008$), and evidence-based decision making ($\beta = -0.377$, $p = 0.000$).

4. Discussion

Our study examined the improvements in managerial skills in general hospitals after specific health management training.

The biggest improvement was in the operational management skills: organizing daily activities, motivating and guiding, supervision, group discussion, and situation analysis. Identified predictors of improvement were: less years of managerial experience, type of manager, type of profession, and recognizing the importance of managerial skills (such as oral communication), evidence-based decision making, and supervising the work of others.

For years there have been discussions in Serbia about the urgent need for operational and strategic plans in health care [49], and this research shows actual hospital

capabilities and the beneficial effects of training on planning skills. After training, operational management notably improved, probably due to the opportunity for frequent application and a desire to see immediate results [50,51]. There is a tendency for managers to be motivated more by immediate than distant goals. Several studies have shown that the skills managers perceive as important and needing improvement were decision making, planning, organizing change, problem solving, risk-taking, and benchmarking, and only after they have solved such problems do they become more open-minded about skills such as communication skills, effective listening and system thinking [52,53].

After training, our principal component analysis indicated a small improvement in general managerial planning skills, but Serbian hospital top managers still did not recognize strategic skills as very important for organizational development. At the same time, it is requested by the Serbian Ministry of Health that hospital managers should be competent in strategic management, and able to influence achievements of common goal [17,49,54].

After training, Serbian hospitals managers with longer managerial experience improved strategic planning skills less [49]. These managers were probably less in need of personal involvement in the process, and relied more on their experience or on highly competent assistants for strategic management or having more experienced, they were better and did not need the training as much [55].

In our study, certain types of managers, such as deputies, and certain professions, such as economists or head nurses, showed less improvement in some managerial skills including group discussions, supervising the work, motivating and guiding others, and applying creative techniques. The possible underlying reasons could be the nature of the working process, lack of teamwork, and extensive involvement in routine management on a daily basis. Physicians, who are a dominant profession in multidisciplinary hospital management teams in Serbia, are strongly involved in the decision-making process and show high levels of collaboration with peers. During recent years, many authors have recommended active involvement of physicians in strategic decision making as well as in teamwork, which leads to improvements in hospital performance, achievement of organizational goals, and higher quality of care [55–57].

Several qualities and skills are recognized as especially important for improving other managerial skills such as developing policies to enhance the performance of their hospitals. These include reliable information generated in the process of evidence-based decision making and oral communication. Communication between managers and employees is essential for achieving a participative approach, good teamwork, and high performance in a health organization [9,58]. Other studies have shown both the positive side of the use of an evidence base, and the main reasons why managers do not practice evidence-based management (namely, lack of time, low feedback, and stakeholders' influence) [59,60].

In our research, correlation between dependent and independent variables and statistically confirmed predictors does not imply a causal relation. Our more experienced

managers were worse in strategic planning, but this would be expected in a highly centralized system where health managers do not have opportunities to apply their own strategic competencies, because the main strategic directions are defined by the Ministry of Health. At the same time duration of their appointments as top managers is usually too short to be involved in the implementation of the strategic plans [8,13,16].

4.1. Limitations

This research has certain limitations. One is a possible selection bias, as the selected hospitals were already in a specific project. There was no control group. Specific program was requested by the Serbian Ministry of Health and European Project to improve particular areas of management skills. However, after analyzing the results of the first questionnaire, we took into account the learners' responses, which asked managers to assess the importance of managerial skills. Another possible limitation is the study method, since it was based on self-assessment, although this can provide an effective basis for cooperative learning and benchmarking [61].

4.2. Policy implications

There is an increasing demand for formal and informal management training programmes, especially for physicians in leadership positions, who need better managerial and leadership skills. Some hospitals spend significant amounts of resources to educate their managers [57], but in Serbia there has been little insight into the educational needs of health care managers. This is the first programme training to involve each hospital's managers as a team and not as separate professional cadres. This approach is new to Serbia, and provides more realistic options for action, support decision making, and be more likely to enable managers to embed proposed reforms.

The Serbian health care system has changed during the past years but changes has been slow as the consequence of legislative and politically unstable environment and low economic development. Therefore, there is a demand for systematic interventions, such as multidisciplinary management training which could lead to improvements of hospitals performance. Research shows that in the countries of Eastern Europe health care staffs are not sufficiently educated enough in health care management to adequately manage hospitals in transition [62]. Positive experiences of the implementation and evaluation of training programmes in health care management may help overcome limited managerial resources in transitional countries.

5. Conclusions

After the training programme, all managerial skills had improved, although the degree of improvement varies. Managers also recognized planning skills as more important for their organizational development after the training, but still they need improvement in strategic planning including skills in performing situation analysis. The importance of evidence-based decision-making skill and

oral communication were recognized as essential for the improvement of other managerial skills.

Attention must be given to issues of strategic management through specific training programme that could increase the managerial competencies, which would in turn be important sources of competitive advantage for organizations, especially when top managers do not have specific managerial education. In Serbia, managers should reorient their skills and practices if they want to achieve the planned increases in effectiveness and efficiencies in their hospitals.

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