



Assessment and self-assessment of the pharmacists' competencies using the Global Competency Framework (GbCF) in Serbia

Ocena i samoocena kompetencija farmaceuta u Srbiji korišćenjem Globalnog okvira kompetencija

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Abstract

Background/Aim. Pharmacists' competence represents a dynamic framework of knowledge, skills and abilities to carry out tasks, and it reflects on improving the quality of life and on patients' health. One of the documents for the Evaluation and Competency Development of Pharmacists is the Global Competency Framework (GbCF). The aim of this study was to implement the GBCF document into Serbian pharmacies, to perform assessment and self assessment of the competencies. **Methods.** The assessment and self-assessment of pharmacists' competencies were performed during the period 2012–13 year in eight community pharmacy chains, in seven cities in Serbia. For assessment and self-assessment of pharmacists competencies the GbCF model was applied, which was adjusted to pharmaceutical practice and legislation in Serbia. External assessment was conducted by teams of pharmacists using the structured observation of the work of pharmacists during regular working hours. Evaluated pharmacists filled out the questionnaire about demographic indicators about the pharmacist and the pharmacy where they work. **Results.** A total of 123 pharmacists were evaluated. Pharmacists' Professional Competency Cluster (KK1) had the lowest score (average value 2.98), while the cluster Management and Organizational Competency (KK2) had the highest score (average value 3.15). The competence Recognition of the Diagnosis and Patient Counseling (K8), which belonged to the cluster KK1, had the lowest score (average value for assessment and self-assessment were 2.09, and 2.34, respectively) among the all evaluated competencies. **Conclusion.** GbCF might be considered as an instrument for the competencies' evaluation/self-evaluation and their improvement, accordingly.

Key words:

pharmaceutics; pharmacies; community pharmacy services; serbia; professional role; questionnaires; patient satisfaction; quality of life.

Apstrakt

Uvod/Cilj. Kompetencije farmaceuta predstavljaju dinamični okvir i obuhvataju znanja, veštine i sposobnosti da se izvrše zadaci sa ciljem unapređenja kvaliteta života i zdravlja bolesnika. Jedan od dokumenata za ocenu i razvoj kompetencija farmaceuta je globalni okvir stručnosti – *Global Competence Framework* (GbCF). Cilj ovog rada bio je primena GbCF u apotekama u Srbiji i ocena i samoocena kompetencije farmaceuta. **Metode.** U periodu 2012–2013. godine izvršena je ocena i samoocena kompetencije farmaceuta u osam apotekarskih lanaca iz sedam gradova u Srbiji. Za ocenu i samoocenu stručnosti farmaceuta primenjen je model GbCF, prilagođen praksi i zakonodavstvu u Srbiji. Eksternu ocenu izvršili su timovi farmaceuta kroz strukturiranu opservaciju (upotrebom GbCF dokumenta) kompetencija farmaceuta tokom radnog vremena. Ocenjivani farmaceuti su popunili i upitnik o demografskim pokazateljima koji su se odnosili na podatke o samom farmaceutu i apoteci u kojoj radi. **Rezultati.** Ocenjena su ukupno 123 farmaceuta. Najviša ocena kompetencija farmaceuta zabeležena je za skup „Upravljanje i organizacija“ (KK2) (srednja vrednost 3,15), dok je skup „Stručno znanje“ (KK1) (srednja vrednost 2,98) ocenjen najnižom ocenom. Kompetencija K8 – „Prepoznavanje dijagnoze i savetovanje bolesnika“, koje pripadaju skupu KK1, imale su najniži skor (srednja vrednost u proceni i samoproceni iznosila je 2,09 i 2,34, respektivno) posmatrajući sve, kompetencije. **Zaključak.** Dokument za ocenu i razvoj kompetencija farmaceuta GbCF može služiti kao instrument za ocenu/samoocenu kompetencije, a samim tim i za njihovo poboljšanje.

Ključne reči:

farmaceuti; apoteke; farmaceutske službe, javne; srbija; profesionalna uloga; upitnici; bolesnik, zadovoljstvo; kvalitet života.

Introduction

The imperative facing health workers of today is competence. Competence represents a dynamic framework of knowledge, skills and abilities to carry out tasks, and it reflects on improving the quality of life and on patients' health^{1,2}.

Pharmacists' competencies have been a lasting subject of consideration and research of the professionals as well as the professional bodies³⁻⁸ who strive for working out adequate tools for assessing and developing the competencies of pharmacists⁹⁻¹².

One of the most popular benchmarks, the General Level Framework (GLF)¹², developed by the Competency Development and Evaluation Group (CoDEG), has found its application in the assessment, and self-assessment of pharmacists, hospitals and public pharmacists across several continents¹³⁻¹⁸, thereby showing a significant progress in the development of competencies. The development of the global policy framework (GbCF) might lead to a harmonization of the pharmaceutical profession globally. Although the differences between various education systems and teaching techniques often exist, pharmacists do share a common goal in professional practice – that is improving patients' health. In order to reach this goal, one must strive for achieving competence in his/her work, regardless work conditions, country or culture⁷.

Striving for the formulation of the global level competency framework (by expert health authorities and associations) has resulted in the creation of the Action Plan for the Period 2006–2010, following many years of work^{3,4,7}. In addition, it has resulted in the Draft Document for the Evaluation and Competency Development in Pharmacists¹⁹, which has been tested in dozens of countries, under the title of the GbCF. The document was created by testing it in practice and by developing of the existing forms, primarily the GLF document.

The GbCF document and the competency evaluation methodology allow for the option of external assessment and self-assessment of competencies, as well as for setting forth of the individual and systemic objectives towards pharmacists' performance improvement. However dominant the external assessment as a way of evaluating the knowledge and work performance is, one may not rule out the value of the self-assessment. It has been proven that the self-assessment is an important skill necessary for the on-going development of health workers^{13-15, 17}. Self-assessments complement other types of teaching in order to enhance the knowledge, skills, and other professional qualities; they actually develop the ability to manage one's self-improvement¹⁹. Even though some legitimate reservations about the objectivity of the self-assessments do exist²⁰, they provide a good basis for altering the everyday practice and for setting of the personal goals related to professional development, and they may also help boost self-confidence about one's own professional values²¹.

Unlike the GLF, the GbCF document recognizes the need for the harmonization of pharmaceutical care, and so one of its aims is therefore establishing equal access to the pharmaceutical care, as well as the equal quality of it on a global level. Application of GbCF contributes to competence

development and application the framework of competencies on global level would enable harmonization of competencies and their standardized development and improvement the work of pharmacists²².

The implementation of the framework in Serbia

According to the Health Care Law of the Republic of Serbia²³, every health professional, who provides health care to citizens, is required to have a work license. The Pharmaceutical Chamber of Serbia²⁴, as the licensing authority, in issuing Health Care Work Licenses to pharmacists in Serbia has not dealt with the evaluation of the pharmacists' competencies so far.

The first evaluation of pharmacists' competencies in Serbia was carried out at the pharmacy Subotica, using the GLF document (2011–12)²⁵. At that time, professional competencies of pharmacists were assessed, following the example of neighboring Croatia^{16, 18}. An intervention for improving some less developed skills was performed (based on the evaluation results). The GLF was assessed as an effective tool for evaluating and developing competencies, and so a broader scientific community became intrigued by the project. In 2012, a Development of Pharmacists' Competencies Convention brought interested pharmacists and representatives of the professional bodies together in Subotica, and facilitated work of an Expert Panel regarding validation of the GbCF document. The validation of the document was then performed. The document was implemented previously in Croatia, and later in Macedonia (both neighboring countries to Serbia, with similar pharmacy practices, legislature and education, and with common cultural, linguistic and traditional backgrounds). After the validation, the document was implemented in several pharmacy chains in Vojvodina.

The aim of this study was to implement the GbCF document into Serbian pharmacies as well as to perform assessment and self assessment of the pharmacists' competencies.

Methods

Before the implementation (from July to September of 2012), participation in the research with GbCF document was offered to all 43 pharmacy chains in the region of Vojvodina. All the pharmacists from pharmacy chains interested to participate in this research gave their written consents for participation in the project. Prior to the implementation of the assessment, all pharmacists were informed about the document, its contents, objectives and methodology. No one of the surveyed pharmacists declined to participate in the project. Each of the pharmacists performed self-assessment of the competencies and than their competencies were assessed by external assessors.

External assessments of pharmacists were performed by 8 teams of pharmacists (each consisting of three pharmacists from each pharmacy chain). The external assessors were selected by convenient sampling from the pharmacists working in the chains where evaluation was performed, and they assessed their peers individually reaching the final decision by consensus of three. Each team member had pharmacy work

experience of more than five years and completed an appropriate training to ensure the consistency and uniform criteria of the assessments. The training covered an introduction to the document and experiences from the practice, as well as a hands-on part: joined assessments together with experienced evaluators of the pharmacists' competencies.

Assessing teams conducted structured observations of the pharmacists' work in pharmacies for several hours during the course of regular business hours. Several hours of observation (3–5 h) were dedicated to evaluating of each pharmacist, pending the number of patients, the events during practice, and other circumstances.

GbCF comprises the areas of pharmacists' work performed in pharmacies. Areas were divided into four clusters: pharmaceutical public health competencies, pharmaceutical care competencies, organization and management competencies and professional / personal competencies. These clusters include twenty competencies (K1-K20). Each competency was measured by specific indicators (SP) – behavioral statements (SP1-SP100) and was related to the professional performance of pharmacists.

A 2010 version of the partially modified and validated GbCF was used for the assessment and self-assessment of pharmacists' competencies; the version had been adjusted to the common practices and the legislation in Serbia. The document consists of several clusters of several individual competencies described by few specific indicators. The Serbian version of the GbCF contains three clusters (competency groups): pharmacists' professional competencies (KK1: K1-K8 Competencies), management and organizational competencies (KK2: K9-K14 Competencies) and Personal and Professional Competencies (KK3: K15-K20 Competencies). The number of clusters has undergone changes since the original version of the GbCF document, which contained four clusters, following the cultural adaptation of this document geared for the wider region of The Balkans (including the Republic of Croatia and the Republic of Macedonia). However this influenced only reorganization of the number and the kind of competencies without omitting any. This allows a simpler and more efficient use of the document

which is more suitable for the Serbian population of the pharmacists. All work activities of pharmacists were included in the measurement. Therefore, the total number of competencies has remained the same (20 in total), while the number of specific indicators has been 101. Specific indicators (SP 1-101) provide a detailed description of the behavior features of a competent pharmacist. In assessing the level of the individual pharmacist competency in the particular field, and in assessing how well pharmacist's knowledge, skills and attitudes reflected the requirements of the document, the assessors applied a structured competency assessment document, based on the GbCF document, and used a Likert scale, as well the description of the contents of specific behavioral indicators. In the applied 1–4 Likert scale, number 1 indicates that the assessment does not meet the expected standard, while number 4 indicates that the expected standard practice is always displayed, with only the sporadic errors. Ratings were determined by consensus of the team members, and each assessed pharmacist was informed about the rating results afterwards. In addition, each participant filled out a questionnaire with demographic indicators pertaining to the pharmacist him/herself, and the pharmacy where he/she worked.

National pharmaceutical associations supported the research: The Pharmaceutical Chamber of Serbia and the Alliance of the Pharmaceutical Associations of Serbia. In addition, each institution involved in the study gave an official approval.

For data analysis we performed several statistical tests: analysis of variance (ANOVA), and univariate tests of significance. Statistical significance was assessed for the $p < 0.05$. All analyses were conducted using the *Statistika* (version 12).

Results

Descriptive analysis

The pharmacists from the 8 out of 43 pharmacy chains accepted to participate. Accordingly, the study involved 123 pharmacists. The main characteristics of the participating pharmacists are shown in the Table 1.

Table 1

Demographic characteristics of pharmacists (n = 123)	
Characteristics	Participants, n (%)
Gender, n (%)	
female	119 (96.75)
male	4 (3.25)
Age (years), $\bar{x} \pm SD$	42.07 \pm 10.48
Work experience (years), $\bar{x} \pm SD$	15.88 \pm 10.93
Education, n (%)	
master degree-level pharmacists	107 (86.99)
master degree-level pharmacists with the additional one postgraduate year	16 (13.01)
Position, n (%)	
pharmacy manager (units)	59 (47.97)
pharmacist	64 (52.03)
Location of relevant pharmacies, n (%)	
city centre	98 (79.67)
periphery, suburban / rural area	25 (20.33)

\bar{x} – mean value; SD – standard deviation.

Assessment results of the external assessors sorted by competency clusters

Assessing the competencies according to clusters the areas of measured competencies were quite uniform, with the highest average score recorded for the cluster KK2 = 3.15, then the cluster KK3 = 3.04 and at the end for the KK1 = 2.98. Table 2 shows the mean and standard deviations for each of the competencies.

The lowest values were recorded in K19 – *quality assurance and research in the work place*.

Summarized scores for each competency cross analyzed with sociodemographic results

There were statistically significant differences observed in clusters of competencies KK1 ($F = 3.73, p = 0.02$), KK2 ($F = 6.58, p = 0.01$) and KK3 ($F = 5.76, p = 0.004$) between

Table 2

Characteristics of competencies in relationship to the assessment type		External assessment	Self-assessments
Competency code	Competency name	$\bar{x} \pm SD$	
KK1 – Pharmaceutical professional competencies			
K1	Health promotion	3.32 ± 0.70	3.12 ± 0.60
K2	Medicines information and advice	3.30 ± 0.69	3.24 ± 0.60
K3	Access to medicines	2.91 ± 0.55	2.96 ± 0.61
K4	Compounding medicines	3.19 ± 0.72	3.07 ± 0.85
K5	Dispensing of drugs and medical devices	3.11 ± 0.47	3.20 ± 0.47
K6	Pharmacotherapy	3.27 ± 0.62	3.28 ± 0.56
K7	Drug therapy follow-up	2.66 ± 0.70	2.63 ± 0.70
K8	Recognition of diagnosis and patient counseling	2.09 ± 0.48	2.34 ± 0.67
KK2 Management competencies and organizational			
K9	Finance and accountable management	3.38 ± 0.61	3.20 ± 0.63
K10	Teamwork and human resources management	2.90 ± 0.65	2.98 ± 0.67
K11	Improvement of the service quality	2.56 ± 0.71	2.55 ± 0.79
K12	Procurement	3.21 ± 0.54	3.05 ± 0.73
K13	Effective inventory control	3.36 ± 0.53	3.22 ± 0.65
K14	Work place management	3.47 ± 0.60	3.37 ± 0.51
KK3 Personal competencies and professional			
K15	Communication skills	3.06 ± 0.58	3.11 ± 0.56
K16	Professional development and competency improvement	2.94 ± 0.66	3.00 ± 0.61
K17	Legislation and regulations	2.91 ± 0.65	2.96 ± 0.66
K18	Professional and ethical practice	3.40 ± 0.55	3.47 ± 0.53
K19	Quality assurance and research in the work place	2.62 ± 0.50	2.83 ± 0.61
K20	Self-management	3.30 ± 0.60	3.32 ± 0.50

\bar{x} – mean value; SD – standard deviation.

Pharmacists recorded the highest competency scores in the following competencies: K14 – *work place management*, K18 – *professional and ethical practice*, and K9 – *finance and accountable management*, and the lowest average values for the competence K8 – *recognition of diagnosis and patient counseling*, K11 – *improvement of the service quality*, and K19 – *quality assurance and research in the work place*.

Among the pharmacists' professional competencies, the highest level of competence is shown in K1 – *health promotion*, and the lowest in K8 – *recognition of diagnosis and patient counseling*.

Regarding competencies of the organization and management, the highest level of competence the pharmacists showed in K14 – *work place management*, while the lowest values in K11 – *improvement of the service quality*.

Professional and personal competencies had the highest values in K18 – *professional and ethical practice*.

the different age groups of pharmacists (group A – below the age of 35, group B – 36 to 50 years of age, and group C – from 51 to 65 years of age) using ANOVA. The highest level of competencies was observed in the B group, then the C group, and the lowest in the A group. Based on the *post hoc* Tukey honest significant difference (HSD) test, it was concluded that there were significant differences between the clusters of KK1, KK2 and KK3 competencies among the pharmacists from the age groups below 35, and from 36 to 50 years of age ($p = 0.02$ for KK1, $p = 0.001$ for KK2, $p < 0.05$ respectively for KK3).

The ANOVA test showed that there were no significant statistical differences between: the Length of Pharmacists' Work Experience and the Pharmacists' Professional Competency Cluster KK1 ($p > 0.05$ $F = 2.56$); whereas significant statistical differences were observed between the four groups of length of pharmacists' work experience (less than

10 years, from 10 to 20 years, from 20 to 30 years and from 30 to 40 years) and KK2 ($p < 0.05$, $F = 5.11$), as well as KK3 Cluster ($p < 0.05$, $F = 4.67$).

In regards to the competency clusters KK1, KK2 and KK3, the t -test showed that there were statistically significant differences between the groups of pharmacists with postgraduate education and pharmacists with a university degree ($t = -2.83$, $p < 0.05$ for KK1, $t = -2.53$, $p = 0.01$ for KK2, $t = -2.14$, $p = 0.03$ for KK3), where the specialists showed a higher level of competence. Use of the t -test showed statistically significant differences related to the type of the working place held: the Head of the pharmacy vs. the Pharmacist, where the heads have shown a higher score in the KK2 ($t = -2.83$, $p < 0.05$), while in the other two clusters of competencies (KK1, KK3) the working place did not show significant effects (KK1, $t = -0.19$; $p > 0.05$, KK3, $t = -1.65$, $p > 0.05$).

Differences in the mean competency values between the pharmacists, grouped by pharmacy location, size and area (rural vs. urban) were not statistically significant. When we analyze the data in all eight pharmacy chains, in 75% of pharmacy chains the largest value of competency clusters had the cluster KK2, and in 50% of pharmacy chains the lowest value of competency clusters had the KK1.

Analysis of the external assessors' assessment in relation to the self-assessment of pharmacists

The results obtained by self-assessments of competencies by the pharmacists themselves confirmed the results of external assessors partially (Table 2). It was noted that the assessment by external assessors contained higher score values than the pharmacists' self-assessments for next competencies: Health promotion, Medicines information and advice, Compounding medicines, Drug therapy follow-up, Finance and accountable management, Improvement of the service quality, Procurement, Effective inventory control and Work place management.

Application of the t -test showed that there were no statistically significant differences in the scores of external assessors and self-assessments of pharmacists in clusters KK1 pharmacists' professional competencies ($t = 0.14$, $p = 0.88$) and cluster KK3 ($t = -1.56$, $p = 0.12$). When it comes to cluster KK2, statistically significant differences between the rating of external assessors and assessment of the pharmacists themselves were found ($t = 2.00$, $p = 0.04$).

The analysis of individual competencies showed a high correlation between the scores assigned by the external assessors and the self-assessment scores of the pharmacists (the Pearson's correlation coefficients were in range from $r = 0.37$ to $r = 0.61$, and all correlations were statistically significant for the level of $p < 0.05$). The results of the t -test emphasized the statistically significant differences in the following competencies: K1 ($t = 3.42$, $p < 0.05$), K8 ($t = -4.03$, $p < 0.05$), K9 ($t = 3.51$, $p < 0.001$), K12 ($t = 3.04$, $p < 0.05$), K13 ($t = 2.87$, $p < 0.05$), K14 ($t = 2.08$, $p < 0.05$), and K19 ($t = -3.66$, $p < 0.001$).

The assessment scores were noticeably lower than the self-assessment ones in K8, K9 and K19, whereas in the other competencies, the assessment scores had higher values than the self-assessed scores.

Discussion

This study is among the first studies in the South Eastern Europe, focusing on the pharmacists' level of competencies with the help of a global-level assessment tool. Competencies of the pharmacists were assessed using external assessors and the pharmacists themselves, confirming the intelligibility and validity of the model applied. The document demonstrated a wide framework that allowed assessments and self-assessments of pharmacists' competencies within public pharmacies of Serbia. By cross analyzing of competencies' scores with the demographic data, the study showed a correlation between the certain demographic indicators and the competencies of pharmacists.

An analysis of the demographic data revealed that the study used a cross section of pharmacists, as their age, gender and educational structure reflected the larger pharmacist population from the Northern Serbia (Vojvodina Branch of the Pharmaceutical Chamber of Serbia)²⁴.

Further analysis of our data showed that there was a high degree of interdependence of the areas of competency. According to McRobbie et al.¹, pharmacists with a higher level of the certain competency demonstrated the competency in the rest of the areas, thereby proving that competence meant in fact the whole dynamics of knowledge, skills and experience of pharmacists.

By cross analyzing the respondents' demographic data, we determined that the levels of the pharmacists' competencies were related to the theoretical knowledge as well as experience. The specialist pharmacists have a higher level of pharmacists' professional competencies. The pharmacists of different ages differed more in professional competencies. The professional and life experience greatly affected the following competencies: Organization and Management, Professional and Personal. Research conducted in the UK, which applied a similar instrument²¹ showed that the self-assessed competencies were affected by age in a positive way, whereas the categories: Activity recording and Postgraduate education were more prevalent in younger pharmacists. Gender, status/working place in a pharmacy and the pharmacy type also influenced the study's self-assessment part, while our study pointed out the importance of the work place and the level of education. Interestingly enough, the specialist pharmacists showed a higher level of self-criticism in both studies, rating themselves lower as compared to the pharmacists without an additional education/training.

The evaluation of pharmacists' competencies provided an insight into the areas, where pharmacists' skills were developed, and where the specific indicators attained higher levels (Promotion of health, Work place management, Professional and ethical practice). More significantly, however, the evaluation also identified the areas in need of improvement

(Recognition of diagnosis, Improvement of the service quality, Quality assurance and Research in the work place).

The role of pharmacists in promoting health in Serbia has been developing for the last ten years through research in the social pharmacy area at Faculties of Pharmacy, and since the Health Care Law has made provisions for it²³. For the pharmacists, it has also represented a new area of activities, where they have recognized their role and place. Acceptance and implementation of the publicly promoted activities reflected also on the results of a similar research conducted in the region, where pharmacists from Serbia achieved a higher level of the competence Promotion of health in relation to colleagues from Croatia was investigated, too^{18,26}. However, the acceptance of that kind of pharmacist' role is quite uneven globally. A research conducted in Nigeria²⁷ showed that pharmacists believed that they could carry out health promotion activities successfully. A study in Sweden²⁸ demonstrated that pharmacists were active in modifying their role within public health, however they were in need of the support of the system in order to develop it. Whereas the pharmacists in Scotland (about 1/3 of participants)²⁹ felt a lack of competence in the promotion and protection of public health or in encouraging behavior changes. A study conducted in Moldova³⁰ suggested that pharmacists did not give great importance to health promotion activities and preventive screening. They evaluated them as the lowest in relation to other activities of professional work, as well as their own competence in these areas: self-assessments were between 3.2 and 4.4 [on a scale from 0 (low competence) to 5 (high competence)].

According to the Good Pharmaceutical Educational Practice document³¹ (by the International Pharmaceutical Federation), one of the seven "starring roles" of a pharmacist is also being a manager. Pharmacists as managers are aware of the importance of knowing the basics of finance and the accountable management, taking part responsibly in creation and achievement of the financial plans, payment collections for goods and services, transparency of financial operations, as well as the concerns about the cost and tangible assets. All these are the specific indicators of this competency, where the respondents demonstrated a higher level of competence.

The competency Professional and ethical practice is among the best rated, and includes specific indicators related to demonstrating the professional attitude and belonging to the profession, as well as the respect for ethical principles in pharmaceutical practice. High average grades in this competency group suggest respect for the importance of rational thinking, critical approach and resolving of ethical dilemmas, which are important for positive treatment outcomes³².

Recognition of diagnosis, which is included in the patient consultation and diagnosis competency, is neither sufficiently accepted, nor developed in Serbia by the pharmacists. A research, that has been conducted in Serbia²⁵ and Croatia earlier^{18,26} with the help of a similar instrument (GLF), has suggested that those activities have not yet been accepted as part of the routine work of pharmacists. One possible explanation may lie in the fact, that they were not an integral part of the regular Pharmacy University curriculum,

either in Serbia or in some other, more advanced country³³ until a few years ago. This reflects on pharmacists, avoiding to provide those services. On the other hand, the younger pharmacists, who have acquired theoretical knowledge, did not have enough experience to demonstrate them in their own practice.

Low assessment values of the Improvement of the service quality competency were affected by its specific indicators: Design and implementation of new services and Innovations and resolution, prevention and follow-up of the DRPs. These specific indicators required a very creative and thorough approach to work (high above average, as in other professions), and they can be found only in sporadic pharmacists. Studies conducted around the world confirm that for the innovations in pharmacists' practice there is a lengthy adjusting and accepting period required, not only by the patients but also by the pharmacists (usually explained by the lack of competence)²⁸⁻³⁰. The aforementioned is true for the "introduction of new services and new design", where pharmacists showed a lower level of competencies. Lower values of competencies in the area of Quality assurance and research in the work place suggest a lack of routine practice of establishing and complying with the standards, the pharmacovigilance routines, as well as the research of the pharmaceutical practice. Pharmacy practice studies are carried out globally at an increased rate. They focus on various issues, from the studies on knowledge and attitudes of patients³³⁻³⁵ to the ones on pharmacists' opinions or their behavior assessment³⁶⁻³⁸. Although these research is important for competence improvement and development, the competency scores suggest that the pharmacists in Serbia are not familiar nor involved in research studies. This might be explained by the lack of interests and small number of studies conducted at the moment.

Self-assessment vs. assessment

The results obtained through self-assessments of pharmacists' competencies confirmed the assessors' results partially, indicating well-established and accepted standards and assessment methodologies. Poor correspondence between self-assessment and assessment scores may be due to inconsistencies, uncoordinated criteria or a poor methodology³⁹. If the correlation is high, self-assessment is regarded as good, and *vice versa*⁴⁰. Sixty-five per cent of the previous studies approximately demonstrated lacking proper correspondence between the assessment scores and self-assessments. Customarily, the most self-confident participants prove the least competent, and the ones of mediocre competence tend to award themselves the most realistic and objective scores⁴¹⁻⁴³. In our study though, it is the opposite: in four (out of twenty) competencies, self-assessments are lower than ratings of the external assessors. They involve a promotion of health competency and a competence in the cluster of organization and management. That may indicate a lack of objectivity and coordination of criteria, or increased self-criticism by the evaluated pharmacists. All these represent the potential weaknesses of the methodology. The

pharmacists' perception of the lack of competence in the area of public health was also observed in the studies in Scotland²⁹ and Moldova³⁰. Nevertheless, pharmacists in Nigeria²⁷ considered themselves as being competent. Although some studies did not find a proper correlation between self-assessments and external assessments^{20, 39-43}, the results obtained in our study indicate a relatively high coordination of criteria between the assessors and the pharmacists and satisfactory objectivity by both sides.

Conclusion

The paper represents the first implementation of the global assessment document related to competencies in Serbian public pharmacies in the north of the country, thereby proving feasibility of implementing the global competency framework model in Serbia. Assessing the competencies according to clusters the areas of measured competencies were quite uniform,

with the lowest average score recorded for the Pharmacists' Professional Competency Cluster (KK1) and highest for the Management and Organizational Competency (KK2). Although there was no statistical difference between the scores of self-assessment and assessment of Pharmacists' Professional Competency Cluster, this cluster was also the one with the competence of the lowest individual average score (Recognition of diagnosis and patient counseling). Therefore, the global competency framework might be considered as an instrument which could point out the cluster that needs to be improved at the community pharmacy settings. Positive experiences in the use of the instrument represent a good basis for the development of competencies and improving the quality and efficiency of education of the pharmacists.

In the future, when pharmacists' personal initiative and support by the system assume the vital role, the application of the global competency framework might upgrade the pharmaceutical health care in Serbia to a higher level.

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