

Evaluation of Competences at the Community Pharmacy Settings

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ABSTRACT

The General Level Framework (GLF) document provides a model to be used in evaluating and upgrading of pharmacists' competences currently used in many countries. This study has several **Objectives**: To show the adaptation process of the GLF document to the Serbian pharmaceutical work practices and regulations; to illustrate the implementation of the GLF document; to evaluate and monitor the development of pharmacists' competencies. **Materials and Methods**: The adaptation, analysis, validation and adjustment of the GLF document were conducted using the expert panel method. The implementation was conducted on a sample of pharmacists employed in Subotica Pharmacy chain. Later, the evaluation of the pharmacists' competencies was performed at two observation points (at the beginning of the study and after 6 months) by the team of seven GLF members. **Results and Discussion**: The GLF document was reviewed by 14 members of the expert panel. During the content validation performed at the expert panel meeting, all competencies stated in the GLF document were rated according to their importance with an average grade of between 8.26 and 9.80 and thus reached a consensus regarding all 26 competencies. During the evaluation of the pharmacists' competences, the greatest improvement after the second observation was noted in the "Patient consent" competency, followed by the "Drug history", "The prescription is legal", "Health needs", "Provision of written information" and "Assessing outcomes of contributions" competencies. All the competencies in the GLF document were accepted for the implementation in the Subotica Pharmacy chain. Six of the competencies there was a significant improvement observed.

Keywords: General Level Framework, Competencies, Community Pharmacy, Pharmacists.

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INTRODUCTION

Competency to practice is defined as the ability to carry out a job or a task, whereas ability based on effective or superior behavior being observed is usually referred to as competency. In the pharmaceutical practice, the pharmacist's ability described as 'fit for purpose' to do the job, is the key assessment area because it ensures that the public are protected and the professional service given would meet public expectations.¹ Continu-

ation of professional education and training (E&T) is an essential part of the health care workforce improvement and the service delivery. In the last few years there was a greater emphasis placed on developing more contemporary visions of professional education and creation of effective programs for the development and evaluation of pharmaceutical competencies improvement. This was done in addition to developing new educational models that aim to



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improve competency and capability development in the pharmacy workforce.²⁻⁷ Acceleration of medical and technology growth further makes a case for constant improvement of skills and evaluation of competencies of pharmacists.⁸⁻¹³ Traditional educational programs in Serbia were mainly based on improvement of theoretical knowledge necessary for provision of pharmaceutical care, but the E&T programs based on continuous professional advancement and competency-based approach can help develop the modern skills, attitudes and capabilities necessary for delivering high-quality pharmaceutical care.

Conventionally, pharmaceutical care in Serbia has been based exclusively on the knowledge gained during the Master's Studies and programs of continual pharmacy education. After an initial university education at 'Master's-level', pharmacists have been required to spend a preregistration year in a community and a hospital pharmacy and pass a registration examination. This examination has included evaluation of knowledge in several scientific pharmaceutical fields (pharmacology, pharmaceutical technology and legislation) without evaluation of any gained competency. After this, the novice pharmacist is granted a license for a seven year period. During this period pharmacists have been required to participate in continuing education programs and collect credits in order to subsequently renew their licenses. In addition, only the theoretical knowledge has been evaluated for a credit collection. So far, a competency assessment has not received sufficient attention in the Serbian context. Pharmacy service has been mostly based on administering drugs to patients and providing basic information about the use of medicines and disease prevention. However, the new service model (pharmaceutical care) requires enhanced competencies and therefore enhanced training modalities.

Pharmaceutical care is defined as: "The responsible provision of drug therapy for the purpose of achieving definite outcomes that improve patient's quality of life".¹⁴ Therefore, knowledge and skills of pharmacists should be directed towards improving the health of patients. One of the most common models for the evaluation and development of pharmacists' capabilities currently in use in Europe, Asia and Australia^{11,12,15-18} is described in the General Level Framework (GLF) document. The GLF is an evidence-based framework developed by the Competency Development and Evaluation Group and in synergy with the International Pharmaceutical Federation (FIP) guiding principles for pharmaceutical education.⁴⁻⁷ The

GLF document contains comprehensive descriptions of behaviors associated with skills, attitudes, activities and knowledge which general level pharmacists ought to apply when providing pharmaceutical care. These competencies have been grouped into four different categories, or 'domains': providing pharmaceutical care, problem-solving, personal competencies and management and organization.¹⁹ The GLF is an evidence-based tool not only for evaluation and self-evaluation, but also for the development of professional competencies in pharmaceutical practice. Improvements of competencies have been observed in the environments which have implemented the GLF document as a training tool.^{11,12,15-18}

This is the first study that reports the evidence associated with development, implementation and evaluation of pharmacists' competencies in Serbia using a validated professional development framework.

The aims of this study are: 1) to show the adaptation process of the GLF document to the Serbian pharmaceutical workforce and regulations; 2) to illustrate the implementation of the Serbian-adapted GLF in a chain of the state-owned pharmacies in the Republic of Serbia, and to evaluate if there is a measurable improvement of pharmacists' competencies and monitoring of the pharmaceutical services provisions.

MATERIALS AND METHODS

Adaptation and Development of the GLF Document. The adaptation, analysis and adjustment of the GLF document to the current Serbian pharmaceutical practice and regulations and content validity of the document were conducted by an expert panel. The Serbian expert panel initially used the Croatian version of the document due to language, cultural, regulatory^{16,17} and health system similarities between Serbia and Croatia based on historical background. Content validity was verified by reviewing whether the competency corresponded to the conceptual definition of the Croatian GLF adaptation. Additionally, the definition of competency was not considered suitable in the following instances: if the wording was not precise; if it was confusing or misleading; or if it was not acceptable due to any statutory regulations of the Republic of Serbia; or if it was deemed inappropriate for the pharmacy custom practices in Serbia. After a discussion by the panel members each competency was anonymously rated on a scale from 1 to 10 (intervals: from 1 to 3 indicating that the competency was "not relevant"; 4 to 6 indicating that the contents of the competency were "not clear and/or ambiguous"; 7 to 10 indicated that the competency was "acceptable"). The competencies were con-

sidered adopted if assessed by an average grade of 7 or above. In case of an average value of below 7, the competency was re-iterated by discussing it until a consensus was reached. After adopting the adjusted competencies some descriptions were partly modified to fit the Serbian pharmaceutical practice and regulations.^{20–22}

The expert panel comprised members of the relevant pharmaceutical organizations and a CoDEG representative. All organizations which took part in the panel discussion signed an agreement of participation. This agreement entailed professional cooperation and support during the project. The members, who had been invited, accepted to participate because every member felt this development had been very important for the future of the pharmacy practice within the context of new roles and services.

For the purposes of implementation and evaluation, this study was limited to the first domain of the GLF competencies related to “Providing pharmaceutical care”.

This first domain of the GLF document comprises 26 competencies. For each competency description the following aspects were used: behavioral statements, actions of competent pharmacists and measurable processes (patient assessment, labeling of the medicine, providing patients with written information etc.).²³

Implementation and Evaluation of the Pharmacists’ Competencies Using the GLF Document.

The implementation and evaluation of the pharmacists’ competencies was conducted by the GLF team on a sample group consisting of the pharmacists currently employed and practicing in all pharmacies of the Subotica Pharmacy chain.²⁴

Subotica Pharmacy consists of 21 pharmacies (15 are located in the city, and 6 in the suburban area) with a total of 32 active (out of 39 employed) pharmacists. Several pharmacists were on sick leave (2 pharmacists), maternity leave (3 pharmacists) and one was on vacation partly or during the whole study period. Also, one was a general manager of the pharmacy chain and did not have a patient-facing role. Therefore seven pharmacists were not included in the study. All of the active pharmacists agreed to participate voluntarily, while recognizing the importance of improving their own competencies. Between the two assessments, numerous interventions related to professional education were carried out, such as creation of standard procedures, development of computer software and making of various written and electronic forms which proved to be helpful tools for the development of pharmacists’ competencies. These tools allowed for a structured assessment, evaluation and improvement.^{11,12,15–18} Furthermore, the pharma-

cists took part in internal and external training sessions dealing with the competencies during the six-month period. These interventions were performed in all the pharmacies.

The practitioner evaluations were carried out using a validated methodology, which had been previously reported as used in the Croatian studies.^{16,17} The evaluation of the competencies was conducted by the GLF team members. The GLF team members comprised Master’s degree-level pharmacists (with an additional postgraduate year). The Master’s degree pharmacists were chosen for a GLF team according to their knowledge, prior work with patients and their experience with the pharmacy management processes. The GLF team members had undergone a training for this activity with the CoDEG representative with prior experience in the GLF implementation in Croatia. The GLF team subsequently conducted two evaluations of the pharmacists; the initial one at the beginning of the study and a latter one after six months. Observations were performed by a structured observation methodology using the evaluation document (check list). Unique assessment criteria were accepted at several meetings of the GLF team before the observation started. At least three GLF team members observed each pharmacist. In addition to routine continuing professional development (CPD) activities, pharmacists were provided an opportunity to use the GLF developmental framework between the two observation points. Observations of the pharmacists were conducted over the course of several hours (for approximately 3 hours) with the main focus on the performance of pharmacists in real-life situations. Rating of each competency of the pharmacists was determined by the consensus of the GLF observation team. Levels of each behavioral statement were carried on a scale from 1 to 4 (“never”, “sometimes”, “mostly” and “always”).

After each evaluation, a pharmacist was informed about the results with the aim of encouraging his/her professional development and further improvement of competencies.

The study was approved by the Ethics Committee of Subotica Pharmacy. The project didn’t have any financial support. The pharmacists had a moral and professional support of the pharmaceutical association and academy. Also, the principal researcher was monitoring the whole project and encouraged pharmacists to participate and improve the practice.

Statistical Analysis

The statistical analysis included descriptive statistics of demographic characteristics of pharmacists and individual competency scores after the 1st and the 2nd assess-

ment. Statistical significance was established using the Whitney U test (set at the level of $p < 0.05$). Differences between the pharmacists' and pharmacies' characteristics and competencies were checked using t-test and ANOVA for significance. All analyses were conducted using The Statistical Package for Social Sciences (SPSS) version 18.0.

RESULTS

Adaptation of the GLF Document for the Serbian Context

The GLF document was reviewed by 14 members of the expert panel: representatives of the pharmaceutical faculty ($n=2$), pharmaceutical associations ($n=3$), community pharmacies ($n=6$), the health care center ($n=1$) and the general hospital ($n=2$), together with the panel moderator and CoDEG representatives for the South-Eastern Europe.²³ Panel members reached consensus on the adopted competencies for the Croatian version.

All competencies were rated with an average grade from 8.26 to 9.80 and thus reached a consensus regarding all 26 competencies. Competencies for "Records of contributions" and "Assessing outcomes of contributions" were perceived as a paperwork burden for pharmacists and thus received the lowest ranking, but they were accepted as an important additional step in documenting the pharmaceutical care. After the rating, the content of each competency was further iterated to make minor language adjustments for the Serbian version of the document.

Practitioner Evaluations using the Serbian GLF Document

Evaluation of practitioner competencies was conducted by the team of 7 GLF members. The evaluation was performed in 21 pharmacies and involved 32 active community pharmacists. The Main characteristics of the participating pharmacists are shown in the Table 1.

Table 1. Demographic Characteristics of Pharmacists

Number of pharmacists, n	32
Gender, n (%)	
Female	31 (96,87)
Male	1 (3,13)
Age, mean (SD)	42,97 (9,26)
Years of work experience, mean (SD)	16,47 (9,80)
Education, n (%)	
Master degree-level pharmacists	22 (68,80)
Master degree-level pharmacists with the additional one postgraduate year	10 (31,20)
Position, n (%)	
Pharmacy manager (units)	15 (46,90)
Pharmacist	17 (53,10)
Location of relevant pharmacies, n (%)	
City centre	15 (46,90)
Periphery	11 (34,40)
Suburban/Rural area	6 (18,80)
Type of relevant pharmacies, n (%)	
Pharmacy within a hospital or an outpatient patient care (except health care centre)	24 (75,00)
Other pharmacies	8 (25,00)

The differences between the scores from the first and the second competency evaluations were determined using Mann-Whitney U test (Table 2).

The lowest-scoring competencies in the 1st assessment were “Records of contributions” and “Assessing outcomes of contributions” (the average grade was 1.00) (Table 2).

Out of the 26 patient care competencies measured, 22 were significantly improved in the second assessment. The largest effect size difference was observed in competency “Patient consent” followed by “Drug history”, “The prescription is legal”, “Health needs”, “Provision of written information” and “Assessing outcomes of contributions”. The competence which was ranked the

Table 2. Main Characteristics of Competences' Scores after the 1st and the 2nd Assessment

Competency	Mean (SD)		Mean difference between the 2nd and the 1st assessment
	I assessment	II assessment	
1. Patient assessment	3.03 (0.31)	3.53 (0.51)	0.50 ^b
2. Consultation or referral	3.44 (0.72)	3.66 (0.48)	0.22
3. Recording consultations	1.25 (0.57)	1.97 (0.47)	0.72 ^b
4. Patient consent	1.28 (0.58)	2.97 (0.18)	1.69 ^b
5. Relevant patient background	2.22 (0.42)	2.88 (0.34)	0.66 ^b
6. Drug history	1.66 (0.48)	2.53 (0.51)	0.88 ^b
7. Drug-drug interactions	2.16 (0.37)	2.41 (0.50)	0.25 ^a
8. Drug-patient interactions	2.16 (0.37)	2.44 (0.50)	0.28
9. Drug-disease interactions	2.22 (0.42)	2.78 (0.42)	0.56 ^b
10. Ensure appropriate dose	3.28 (0.58)	3.75 (0.44)	0.47 ^a
11. Selection of dosing regimen	3.16 (0.45)	3.69(0.47)	0.53 ^b
12. Selection of formulation and concentration	3.94 (0.25)	3.97 (0.18)	0.03
13. The prescription is clear	4.00 (0.00)	4.00 (0.00)	0.00
14. The prescription is legal	2.13 (0.49)	3.00 (0.00)	0.88 ^b
15. Labelling of the medicine	3.00 (0.00)	3.50 (0.51)	0.50 ^b
16. Public health	3.00 (0.36)	3.31 (0.47)	0.31 ^a
17. Health needs	1.91 (0.30)	2.78 (0.49)	0.88 ^b
18. Need for information identified	2.84 (0.51)	3.25 (0.51)	0.41 ^a
19. Medicines information	2.97 (0.54)	3.44 (0.50)	0.47 ^a
20. Provision of written information	1.28 (0.58)	2.15 (0.37)	0.88 ^b
21. Identification of medicines management problems	2.19 (0.59)	2.69 (0.47)	0.50 ^a
22. Prioritization of medicines management problems	2.69 (0.74)	3.13 (0.66)	0.44 ^a
23. Use of guidelines	1.19 (0.40)	2.00 (0.51)	0.81 ^b
24. Resolution of medicines management problems	2.88 (0.66)	3.22 (0.66)	0.34 ^a
25. Records of contributions	1.00 (0.00)	2.56 (0.56)	1.56 ^b
26. Assessing outcomes of contributions	1.00 (0.00)	1.88 (0.34)	0.88 ^b

^a statistically significant difference, at the level $p < 0.05$ (Mann-Whitney U test)

^b statistically significant difference, at the level $p < 0.001$ (Mann-Whitney U test)

same after the 1st and the 2nd evaluation (average grade was 4.00) was “The prescription is clear”. In addition, the competence “Selection of formulation and concentration” had a slight improvement (mean difference rating between assessments 0.03, not statistically significant) (Table 2).

The changes in competency differences between the two observation points were examined for the following

demographic variables: age, years of work experience, education, job position, location and type of pharmacy. The most significant effects were observed in: the “years of work experience” (competencies: 7, 15, 17, 18, 19, 21 and 24) category. The changes in improvement of these competencies were statistically different between the pharmacists with work experience of less than and more than 17 years (Table 3).

Table 3. Significant Differences of Competencies in the 1st and the 2nd Assessment According to Variable Groups

		Variables				
Competency	Age (<45 yrs. in comparison to > 45 yrs.)	Work experience (<17 yrs. in comparison to >17 yrs.)	Education (university degree in comparison to specialization)	Job position (pharmacist in comparison to manager)	Location of pharmacy (1-center,2-periphery,3-rural)	Type of pharmacy (at outpatient care in comparison to other)
1	Patient assessment		t = -2,43 ^a		F = 4,61 ^c	
3	Recording consultations					t = 2,29 ^a
4	Patient consent					t = 3,26 ^a
6	Drug history			t = -2,41 ^a		
7	Drug-drug interactions		t = 2,37 ^a			
8	Drug-patient interactions				F = 4,01 ^c	
11	Selection of dosing regimen				F = 5,03 ^c	t = -2,37 ^a
15	Labelling of the medicine	t = 5,37 ^b	t = 3,74 ^b		F = 7,10 ^c	
17	Health needs	t = 3,32 ^a	t = 2,93 ^a		F = 3,43 ^c	
18	Need for information identified		t = 2,35 ^a			
19	Provision of written information	t = 2,06 ^a	t = 2,78 ^a			
21	Identification of medicines management problems		t = 2,67 ^a			t = -2,63 ^a
24	Resolution of medicines management problems		t = 2,51 ^a			
25	Records of contributions	t = 2,25 ^a				

^a statistically significant difference, at the level p<0.05 (t-test)

^b statistically significant difference, at the level p<0.001 (t-test)

^c statistically significant difference, at the level p<0.05 (ANOVA)

Statistically significant correlations were noted between the pharmacists' age and effect size difference between the assessments of three competencies: "Consultation or referral", "Labeling of the medicine" and "Health needs". More improvement in competency number 2 ("Consultation or referral") were noted for pharmacists above the age of 45, than below the age of 45 pharmacists ($r=0.41$, $p<0.05$), while the pharmacists below the age of 45 showed more improvement in competencies 15 ("Labeling of the medicine") and 17 ("Health needs") in comparisons with pharmacists above the age of 45 ($r=-0.58$, $p<0.001$; $r=-0.49$, $p<0.05$ respectively).

Years of work experience positively correlate with the increase in the difference (from the baseline values) in competencies: 2 ("Consultation or referral") and 5 ("Relevant patient background") ($r=0.40$, $p<0.05$; $r=0.35$, $p<0.05$ respectively), but negatively with the increase in differences in competencies 15 ("Labeling of the medicine") and 17 ("Health needs") ($r=-0.53$, $p<0.05$; $r=-0.51$, $p<0.05$, respectively).

Encouraged by the newly found knowledge, constant development of competencies was supported by numerous innovations implemented in the everyday practice at "Subotica Pharmacy": the software for pharmacists was upgraded with the one which can document interventions and pharmacists' errors in issuing medicines; a new form of electronic patients records was implemented; the access to physicians national guidelines for clinical practice was introduced electronically. There was an improvement in handing out a manually filled out information form to patients. The form had a redesigned chart to ensure accurate drug usage and storage by the patients, providing directions for diabetes

DISCUSSION

This has been the first study in Serbia with an aim at adapting and implementing the GLF document for the general level practice. All of the competencies have been accepted. Competency evaluation pointed out the fields of pharmacy practice which had been already developed and some which should be improved. The results of the second evaluation demonstrated improvements of the pharmacists' competencies.

Although the original GLF document has been based on practice in two areas such as the hospitals and the UK community pharmacies, the professional literature contains evidence of its transferability to other systems and cultures.^{12,16-18} The Serbian expert panel initially used the Croatian version of the document due to similarities between the Serbian and the Croatian practice and regulations. The Serbian panel adopted all competencies with high level of agreement regarding the credibility

of competencies,²³ similar to the previously published Croatian research.^{16,17}

The highest scores were noted for the competencies "Patient assessment" and "The prescription is clear". Both were recognized to be important to qualified pharmacists, especially from the point of view of their communication skills. This result was similar to the Croatian panel,¹⁶ where the highest scoring competency "Ensure appropriate dose" was followed by "Patient assessment".

The areas: "Selection of dosing regimen" and "Selection of formulation and concentration" require a high level of expertise, where pharmacists, as drug experts, can greatly contribute to appropriate and safe pharmacotherapy. According to the current regulations, pharmacists are not allowed to change the drug prescription. High average grade of these competencies shows that pharmacists take this responsibility seriously.

The single competency which had the same mark after the 1st and the 2nd assessment was "The prescription is clear". Due to strict regulations, internal procedures and strict requirements by the Republic of Serbia Health Insurance Fund, pharmacists make sure that all the prescription data must be clear and understandable to be accepted. Consequently, pharmacists inspect doctors' prescriptions for clarity and sufficient legibility.

"Labeling of the medicine" had a high grade being a standard procedure and according to the evaluation, the assessed pharmacists mostly adhere to it. The results of the research which had been previously conducted in Croatia are comparable with Serbian results – competencies with the highest rankings were those concerned with the supply of medicines, selection of formulation and concentration, selection of dosing regimen as well as labeling of the medicine.^{16,17} A pharmacist is an expert, whose duty is to be engaged in the health education of citizens.^{25,26}

The lowest-scoring competencies in the 1st assessment were "Records of contributions" and "Assessing outcomes of contributions". At the beginning these competencies were perceived as a paperwork burden, but they were significantly improved in the 2nd assessment. These results resemble the results obtained in the Croatian studies, which suggests that there are similarities in the pharmacy practices and competencies of the Croatian and Serbian pharmacists. In Croatia, the lowest-scoring areas were for the two groups of competencies "Evaluation of outcomes" and "Monitoring therapy" (comprising competencies 23, 24, 25 and 26).^{16,17}

In addition, the process of GLF implementation had a significant impact on continual professional development of pharmacists. Encouraged by the newly found

framework support, constant development of competencies was supported by several kinds of activities implemented simultaneously in all pharmacies at “Subotica Pharmacy” (software improvement, creation of the electronic patient records, using of the national guidelines in the electronic form). The competencies: “Patient consent” for providing pharmaceutical care as well as “Records of contributions” became a new part of the pharmaceutical care routine after the education.

The negative value of the correlation coefficients between the age and the scores in the first and the second assessment may suggest slower change of habits in the more experienced pharmacists. This fact was also confirmed by the negative correlation between the years of work experience and change of competency scores.

This study has had several limiting factors. First, the Croatian GLF document was converted into the Serbian language document using terminological modifications based on similarities between the Serbian and Croatian languages and cultures. Second, one possible bias in the research might have been the evaluation of pharmacists by their colleagues. In order to prevent the prejudice towards the evaluation, pharmacists received all necessary information and help in overcoming discomfort. The evaluation team’s attitude might have been amicable in their observations. In order to avoid the observational bias they had undergone training for this activity. Third, there was only one published study which could enable the comparison of the results.^{16,17} Fourth, the study period was short (6 months); therefore changes of the competencies required a great effort on part of the pharmacists. A clearer picture of the competency improvement should possibly have been available after a somewhat longer period. Other published studies are usually conducted in a 12-month period (or longer).^{11,12,15-18} Fifth, during the evaluation of the competencies there sometimes were other aggravating factors impeding pharmacists to fully demonstrate their competencies such as the number of patients, patients who were difficult to work with etc.

CONCLUSION

During the GLF expert panel meeting all the competencies were reviewed and adjusted to the pharmaceutical work practices and regulations. All competencies in the GLF document were accepted for the implementation in the state-owned Subotica Pharmacy chain. The evaluation at the second observation point showed that 22 out of 26 patient care competencies improved. It is noteworthy to say that the GLF document has enabled the identification of both strengths and weaknesses in competencies and is a valuable support for the identi-

fication of needs for continued professional education and training.

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CONFLICTS OF INTERESTS

None

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