

СОЦІАЛЬНА МЕДИЦИНА І ФАРМАЦІЯ: ІСТОРІЯ, СУЧАСНІСТЬ ТА ПЕРСПЕКТИВИ РОЗВИТКУ

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ELABORATION OF PSYCHODIAGNOSTIC TOOLS FOR ASSESSING THE LEVEL OF DEVELOPMENT OF PROFESSIONALLY IMPORTANT SOCIO-PSYCHOLOGICAL CHARACTERISTICS OF A SPECIALIST IN PHARMACY

Aim. To select tests that will allow assessing the level of development of socio-psychological characteristics (SPChs) of specialists in pharmacy.

Materials and methods. The methods of expert evaluations, analytical, comparative and logical methods were used. Practical psychologist and professionals specializing in the staff recruitment for pharmaceutical institutions took part in the survey. The results of the expert survey are convergent, the degree of consistency of expert representations is high, and it is confirmed by the coefficient of concordance, which is equal to 0.826. The actual value of the Pearson criterion is considerably greater than the table one ($\chi^2_r > \chi^2_{\text{tabl}}$).

Results. On the basis of the research conducted it has been found that for selection of specialists in pharmacy and determination of their SPChs the following methods are more often used abroad: survey with the subsequent interviewing; qualification with the subsequent interviewing; testing and / or interviewing; testing for professional competence with the practical examination.

Due to the algorithm for selection of tests for the evaluation of professionally important SPChs of specialists in pharmacy the final list of psychodiagnostic testing methods of pharmacy specialists was formed. It included Questionnaire (16PF) by Raymond B. Cattell, Stambulova's method, "Vocabulary Labyrinth" method, questionnaire for determining the level of self-esteem, V. Boyko's diagnostic method for communicative attitude, as well as the assessment of communicative and organizational inclinations in the process of communication.

Conclusions. The methods of psychodiagnostic testing proposed can assess the level of development of socio-psychological characteristics of a specialist in pharmacy.

Key words: socio-psychological characteristics; specialist in pharmacy; pharmacy; psychodiagnostic testing

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РОЗРОБКА ПСИХОДІАГНОСТИЧНОГО ІНСТРУМЕНТАРІЮ ДЛЯ ОЦІНКИ РІВНЯ РОЗВИТКУ ПРОФЕСІЙНО ВАЖЛИВИХ СОЦІАЛЬНО-ПСИХОЛОГІЧНИХ ХАРАКТЕРИСТИК ФАХІВЦЯ ФАРМАЦІЇ

Мета: відбір тестів, які дозволять оцінити рівень розвитку соціально-психологічних характеристик фахівців фармації.

Методи: експертних оцінок, аналітичний, порівняльний та логічний. В опитуванні брали участь практичні психологи та фахівці, які спеціалізуються на прийомі персоналу для фармацевтичних закладів. Результати експертного опитування є збіжними, ступінь узгодженості уявлень експертів високий, що підтверджено коефіцієнтом конкордації, який дорівнює 0,826. Фактичне значення критерію Пірсона значно перевищує табличне ($\chi^2_\phi > \chi^2_{\text{табл}}$).

Результати. На підставі проведеного дослідження визначено, що за кордоном для відбору фахівців фармації та визначення їх СПХ частіше застосовують такі методи, як співбесіда з подальшим інтерв'юванням; кваліфікація з подальшим інтерв'юванням; тестування та/або інтерв'ювання; тестування на професійну придатність із практичним іспитом. За допомогою запропонованого алгоритму проведення відбору тестів для оцінювання професійно важливих СПХ фахівців фармації сформовано остаточний перелік методик психодіагностичного тестування фахівців фармації: опитувальник 16PF Р. Кеттелла, методика Н.Б. Стамбулової, методика «Словниковий лабіринт», опитувальник для

визначення рівня самооцінки, методика діагностики комунікативної настанови В. Бойка, оцінка комунікативних і організаторських схильностей у процесі спілкування.

Висновки. Запропоновані методики психодіагностичного тестування дозволяють оцінити рівень розвитку соціально-психологічних характеристик фахівця фармації.

Ключові слова: соціально-психологічні характеристики; фахівець фармації; аптека; психодіагностичне тестування.

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РАЗРАБОТКА ПСИХОДИАГНОСТИЧЕСКОГО ИНСТРУМЕНТАРИЯ ДЛЯ ОЦЕНКИ УРОВНЯ РАЗВИТИЯ ПРОФЕССИОНАЛЬНО ВАЖНЫХ СОЦИАЛЬНО-ПСИХОЛОГИЧЕСКИХ ХАРАКТЕРИСТИК СПЕЦИАЛИСТА ФАРМАЦИИ

Цель: отбор тестов, позволяющих оценить уровень развития социально-психологических характеристик специалистов фармации.

Методы: экспертных оценок, аналитический, сравнительный и логический. В опросе участвовали практические психологи и специалисты, специализирующиеся на приеме персонала для фармацевтических учреждений. Результаты экспертного опроса являются сходимыми, степень согласованности мнений экспертов высокая, что подтверждено коэффициентом конкордации, равным 0,826. Фактическое значение критерия Пирсона значительно превышает табличное ($\chi^2_{ф} > \chi^2_{табл}$).

Результаты. На основании проведенного исследования установлено, что за рубежом для отбора специалистов фармации и определения их СПХ чаще применяют такие методы, как собеседование с последующим интервьюированием; квалификация с последующим интервьюированием; тестирование и/или интервьюирование; тестирование на профессиональную пригодность с практическим экзаменом. С помощью предложенного алгоритма проведения отбора тестов для оценки профессионально важных СПХ специалистов фармации сформирован окончательный перечень методик психодіагностического тестирования специалистов фармации: опросник 16PF Р. Кеттелла, методика Н. Б. Стамбуловой, методика «Словарный лабиринт», опросник для определения уровня самооценки, методика діагностики комунікативної установки В. Бойко, оцінка комунікативних і організаторських схильностей в процесі об'єднання.

Выводы. Предложенные методики психодіагностического тестирования позволяют оценить уровень развития социально-психологических характеристик специалиста фармации.

Ключевые слова: социально-психологические характеристики; специалист фармации; аптека; психодіагностическое тестирование.

Statement of the problem. The work of specialists in pharmacy is multifaceted and requires knowledge, skills and abilities from them, and above all professionalism. In this case, professionalism is achieved not only by the level of education received in higher education institutions, but also by the experience of work, and wish to study, develop and career advancement. On the other hand, new conditions of management, the rapid development of pharmacy, the constant updating of software and other factors caused by market relations require pharmacists with new knowledge not only in the field of pharmacology and pharmacy, but also in the field of modern information technology, as well as the skills of sales, communication and settling conflicts.

Analysis of recent research and publications. There are many works devoted to the study of the professional competence level of pharmacy professionals. Among them it is worth mentioning the works by Tolochko V. M., Galiy L. V., Ponomarenko M. S., Kabachna A. V., Mnushko Z. M., Pestun I. V., etc.; they mainly studied professional competences of domestic and foreign specialists in pharmacy.

The socio-psychological characteristics (SPChs) were studied by Galiy L. V., Tolochko V. M., Grovovik B. P. and other scientists.

Identification of aspects of the problem unsolved previously. One of the most commonly used estimation tools of both professional competencies and SPChs is the standardized, time-limited test consisting of a set of tasks or particular traits designed to identify certain features. The test method justification has been based both on the analysis of the experience of foreign pharmacies (England, France, Germany, Sweden, Italy, etc.) and the results of the expert questioning of domestic institution leaders, 92.7 % of them expressed their opinion on the feasibility of testing pharmacy specialists in two directions – professional and socio-psychological components.

Objective statement of the article. The aim of the article was to select tests that will allow assessing the level of development of SPChs of specialists in pharmacy.

Presentation of the main material of the research. In order to determine the level of formation of the professionally important SPChs for specialists in pharmacy it is necessary to

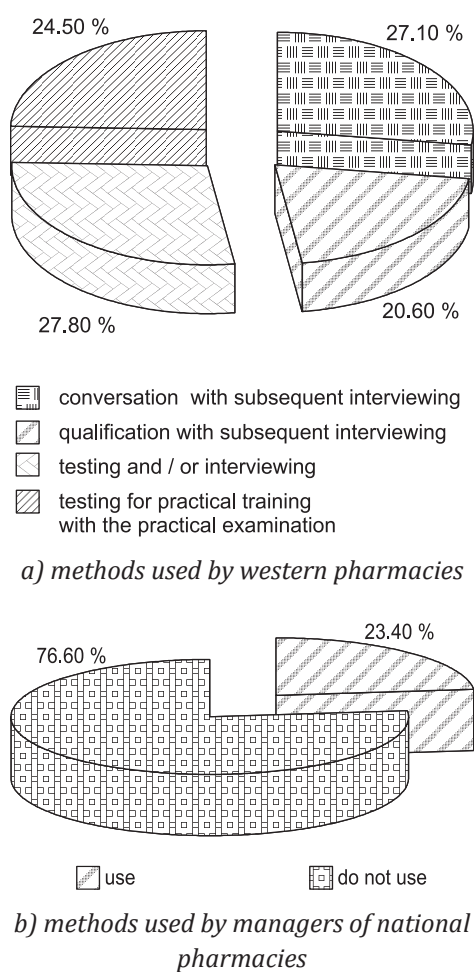


Fig. 1. Methods for selection and testing of SPChs of specialists in pharmacy

develop the appropriate psychodiagnostic tools. To select specialists in pharmacy and determine their SPChs the following methods are more often used abroad: an interview with subsequent interviews (England, Italy) (27.10 %); qualification with the subsequent interviewing (France) (20.60 %); testing and / or interviewing (Germany, Switzerland) (27.80 %); testing for professional competence with the practical examination (24.50 %) (Fig. 1a) [1-4].

Almost a quarter of foreign pharmacy managers in order to assess SPChs, which they want to see from their employees, uses testing and / or interviewing. The results of the survey of the heads of domestic pharmacies conducted indicate that today the methods of selection are not always applied when hired for work (76.6 %) (Fig. 1b).

However, in today's conditions of the pharmaceutical market variability and the actuality

of creating a patient-centric space there is a problem of selection of specialists in pharmacy, who not only have a high level of professional competence, but also definite SPChs required for performing their professional activities. This, in turn, determines the need to select and substantiate the appropriate methods for assessing SPChs.

To select tests for discovery of professionally important (SPChs) specialists for a pharmacy a survey was conducted by leading psychologists whose views on tests to determine the characteristics of specialists coincide. Two categories of specialists – psychologists and professionals specializing in recruitment of the staff for pharmaceutical institutions were experts. All specialists have a higher education: psychologists – 100 % with the psychological education; specialists in the personnel recruitment – 67 % of pharmacists and 33 % of the personnel management.

The work experience of specialists is: up to 5 years – 7 % of specialists, 5-10 years – 21 % of specialists, 10-20 years – 29 % of specialists, 20-30 years – 35 % of specialists, more than 30 years – 8 %. The sample of experts is representative. The use of psychologists and specialists in the personnel recruitment as experts is due to the need to take into account both the psychological aspects of work and the specificity of the pharmaceutical institution activity, current trends in world pharmacy and the rules of good pharmacy practice.

The psychodiagnostic tests that would take into account the pharmacy specificity was selected on the basis of the algorithm proposed (Fig. 2).

The degree of consistency of expert representations is high; it has been confirmed by the coefficient of concordance, which is equal to 0.826. The actual value of the Pearson criterion is considerably greater than the table one ($\chi^2_f > \chi^2_{\text{tabl}}$). This allows us to assert nonrandomness of the consistency in their opinions. Based on this, the general list of methods for diagnosing professionally important SPChs of specialists in pharmacy has been identified (Tab. 1 and Fig. 3).

Thus, on the basis of the studies conducted for psychodiagnostic testing of pharmacists in order to determine the level of development of SPChs of specialists in pharmacy the following

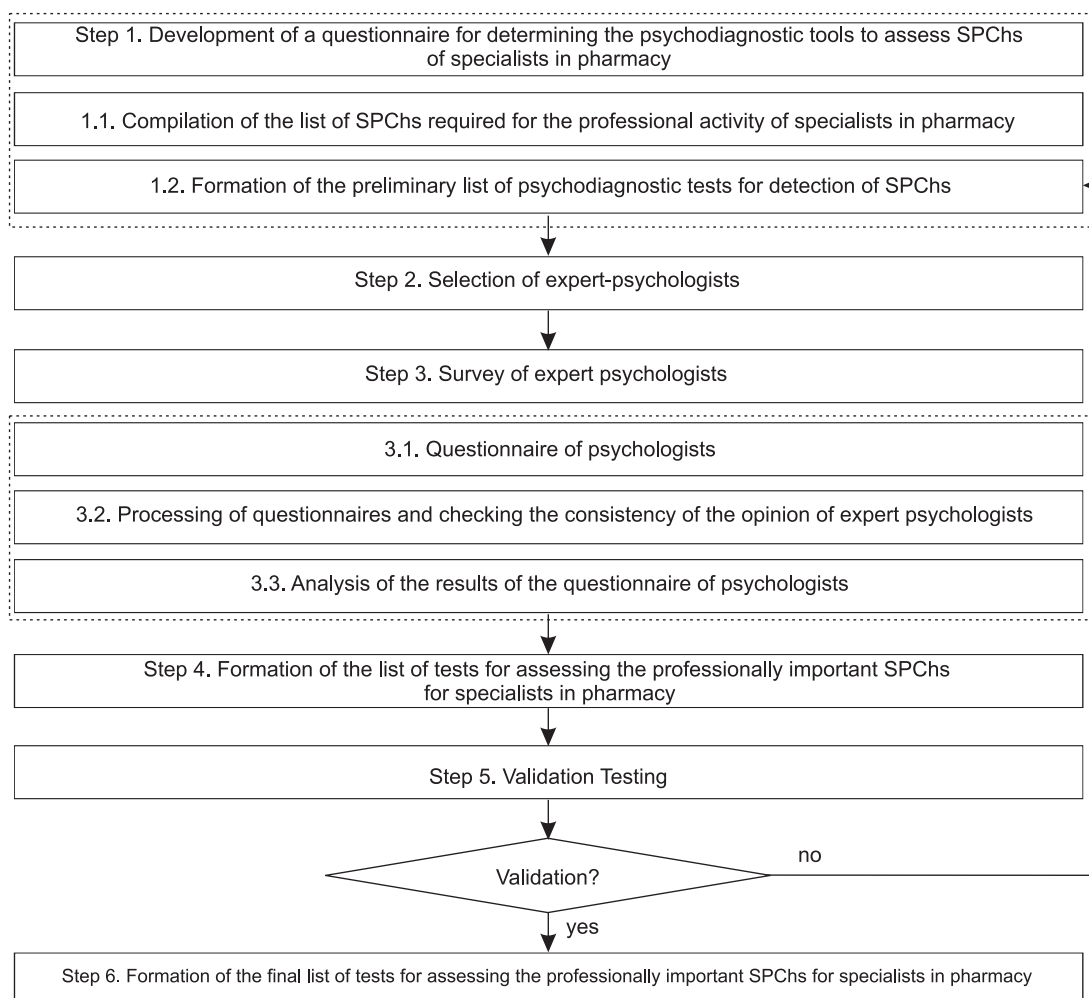


Fig. 2. The algorithm for selection of tests for assessing the professionally important SPChs for specialists in pharmacy

Table 1

THE GENERAL LIST OF METHODS FOR ASSESSING PROFESSIONALLY IMPORTANT SPChs FOR SPECIALISTS IN PHARMACY OFFERED TO PSYCHOLOGISTS

Parts of SPChs	Method	Mark	Rank
1	2	3	4
Psychoemotional stability (balance, stress resistance, ability to self-adjustment of feelings, conflict-free)	Sixteen Personality Factor Questionnaire (16PF) by Raymond B. Cattell	X1	9.9
	Eysenck Personality Questionnaire	X2	8.2
	"Estimation of professional stress" method (Wiesman's questionnaire)	X3	7.9
	Stress resistance test (Suvorova V. V.)	X4	7.5
	"Emotional Stability" test	X5	7.2
	Method for determining stress resistance and social adaptation by Holmes and Rague	X6	6.9
	Neuropsychological stability test	X7	5.7
	Equilibrium test	X8	4.4
	Thomas's test	X9	4.3
	"Conflict person" test	X10	3.8

Continuation of the Table 1

1	2	3	4
Strong-willed qualities (driveness, initiative, energy)	Stambulova's methodology	X11	9.7
	Level of subjective control	X12	7.0
	"Strong-willed qualities" test	X13	6.7
	General Self-Efficacy Scale (GSE) by R. Schwarzer and M. Jerusalem	X14	4.2
Moral qualities (responsibility, honesty, sense of duty)	Sixteen Personality Factor Questionnaire (16PF) by Raymond B. Cattell	X1	9.9
	Honesty test	X15	5.4
	Test "Responsibility"	X16	3.4
	Oxford personality test	X17	3.1
	Test "Are you Honest?"	X18	2.8
	Test "How are you sincere?"	X19	2.1
Intellectual (cognitive) qualities (intellectual lability, memory, attention, thinking, creativity)	"Vocabulary Labyrinth" method	X20	9.1
	Correction test (Bourdon's test)	X21	7.4
	Method by Leo Postman	X22	7.1
	The Schulte test	X23	6.6
	Logic test	X24	6.4
	Test for analytical thinking and memory	X25	4.2
	Questionnaire (16PF) by Raymond B. Cattell	X26	4.1
	Vanderlik's test	X27	4.0
	"Intellect abstract thinking" test	X28	3.8
	"Creativity" test	X29	3.7
	Test on creative abilities	X30	2.4
	Creative potential test	X31	1.7
Personal attitude (value system, performance capability, self-esteem, self-conception)	Questionnaire for determining the level of self-esteem	X32	9.1
	"The scale of self-esteem" test (by Kirsheva, Ryabchikova)	X33	5.9
	"Don't underestimate yourself!" test	X34	5.5
Attitude to people (empathy, communication skills, customer orientation)	V. Boyko's diagnostic method for communicative attitude	X35	9.6
	Assessment of communicative and organizational inclinations in the communication process	X36	6.9
	Questionnaire (16PF) by Raymond B. Cattell	X37	6.2
	V. Boyko's method for diagnosing the level of empathic abilities	X38	6.1
	Yusupov's method for diagnosing the level of empathy	X39	5.8
	"Assessment of the level of sociability of the individual" test	X40	5.3
	Tolerance test	X41	4.6
	The test for communicability detection by V. Kan-Kalik and M. Nikandrov	X42	4.1
	"Customer Orientation" test	X43	3.5
	Belbin's test	X44	2.4
Attitude (self-discipline, responsibility, team orientation)	Assessment of communicative and organizational inclinations in the communication process	X46	9.5
	Questionnaire (16PF) by Raymond B. Cattell	X47	7.1
	Test by Bazhin and Eetkind	X48	6.4
	Questionnaire by Smekala-Cuchera	X49	6.2
	"Are you organized?" test	X50	6.0
	Assessment of loyalty to the institution	X51	5.6
	"What are your abilities for doing business?" test	X52	5.3
	Motivation of the professional activity (method by K. Zamfir in modification of A. Rean)	X53	4.9
	"Ability to work in a team" test	X54	3.6
T. Leary's test on interpersonal relationships	X55	3.1	

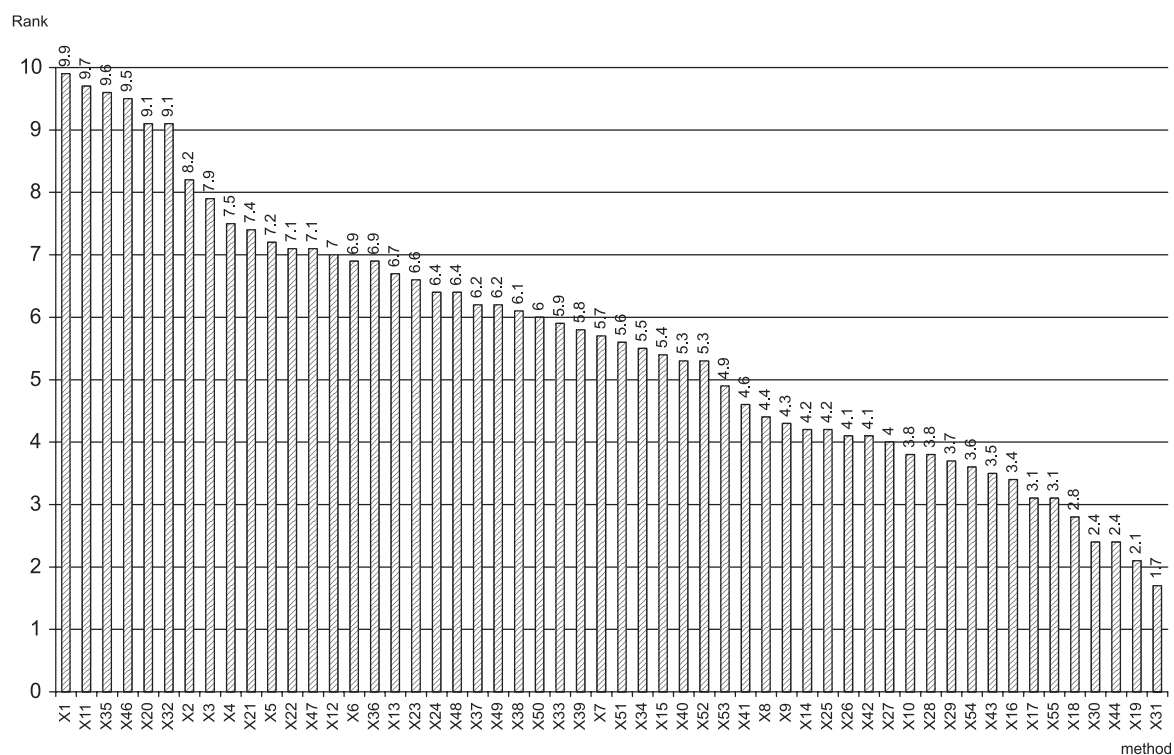


Fig. 3 The histogram of the opinions of expert-psychologists regarding the methods of diagnosing professionally important SPChs for pharmacy specialists

methods have been selected: Sixteen Personality Factor Questionnaire (16PF) by Raymond B. Cattell, Stambulova's method, "Vocabulary Labyrinth" method, questionnaire for determining the level of self-esteem, V. Boyko's diagnostic method for communicative attitude,

as well as the assessment of communicative and organizational inclinations in the process of communication (Tab. 2). The test methods proposed are common, but they allow assessing those SPChs that a specialist in pharmacy needs for performing the professional

Table 2

DESCRIPTION OF PSYCHODIAGNOSTIC TESTS TO DETERMINE THE SPCH LEVELS FOR SPECIALISTS IN PHARMACY

Method	Content	SPChs, which a specialist in pharmacy should have for the professional activity
1	2	3
Questionnaire (16PF) by Raymond B. Cattell, (X1) [5-7, 14]	Provision of an integral characteristic of the "individual psychological characteristics and the emotional-volitional sphere of the personality" makes it possible to clarify the character traits, aptitudes and interests of the personality	Psychoemotional stability (balance, stress resistance, ability to self-adjustment of feelings, conflict-free) Moral qualities (responsibility, honesty, sense of duty)
Stambulova's method (X11) [10-12, 15]	It is aimed to assess the level of development of the own volitional qualities: drivenness, persistence and perseverance, courage and determination, initiative and autonomy, self-control and endurance	Strong-willed qualities (drivenness, initiative, energy)
"Vocabulary Labyrinth" method (X20) [9, 13]	It is aimed at studying communicative skills in communication, determining the type of interaction and cooperation	Intellectual (cognitive) qualities (intellectual liability, memory, attention, thinking, creativity)

Continuation of the Table 2

1	2	3
Questionnaire for determining the level of self-esteem (X32) [8, 13]	It is aimed at studying a set of factors of attitude towards oneself: self-esteem, autosympathy, self-interest, expected attitude from others, self-acceptance, self-control, etc.	Personal attitude (value system, performance capability, self-esteem, self-conception)
V. Boyko's diagnostic method for communicative attitude (X35) [5-6]	It is intended to identify the negative communicative types of the specialist's attitudes towards other people (various kinds of cruelty in relation to people and judgments about them, the tendency to make unreasonable generalizations of negative facts in relations with partners), and to substantiate negativism in judgments about people and the negative personal experience of communication with others	Attitude to people (empathy, communication skills, customer orientation)
The assessment of communicative and organizational inclinations in the process of communication (X46) [5-6, 11-14]	It is intended for revealing of communicative and organizational tendencies of the person (ability to clearly and quickly establish business and comradesly contacts with people, the desire to expand contacts, participation in group activities, ability to influence on people, etc.)	Attitude (self-discipline, responsibility, team orientation)

activities at the appropriate level, providing implementation of the requirements of good pharmacy practice, and creating a patient-centered space of a pharmacy institution.

Thus, the set of tests selected will allow to thoroughly investigate SPChs, which a specialist in pharmacy should have.

Conclusions

1. The relevance of formation of the complex of psychodiagnostic tools for assessing the level of development of socio-psychological characteristics of specialists in pharmacy has been determined. The methods of psychodiagnostic testing proposed can assess the level of development of socio-psychological characteristics of a specialist in pharmacy.

2. The methods of selection of specialists in pharmacy used by foreign and domestic pharmacy managers have been studied.

3. Based on the studies of the level of development of the socio-psychological characteristics of pharmacists the following psychodiagnostic tools have been selected: Questionnaire (16PF) by Raymond B. Cattell, Stambulova's method, "Vocabulary Labyrinth" method, questionnaire for determining the level of self-esteem, V. Boyko's diagnostic method for communicative attitude, as well as the assessment of communicative and organizational inclinations in the process of communication.

Conflict of Interests: authors have no conflict of interests to declare.

References

1. Daijob.com – Looking for jobs in Japan? Want to work in Japan? [Internet]. – Available at : <https://www.daijob.com>
2. Job search on jobs.ch, the leading online job portal on the Swiss market [Internet]. – Available at : <http://www.jobs.ch/en/vacancies>
3. Offres d'emploi : Trouvez un emploi avec Jobintree.com [Internet]. – Available at : <http://www.jobintree.com>
4. FindJobInfo.com : Job Search [Internet]. – Available at : <http://findjobinfo.com/>
5. Сборник психологических тестов. Ч. I / сост. Е. Е. Миронова. – Минск : Женский институт ЭНВИЛА, 2005. – 155 с.
6. Настольная книга практического психолога / сост. С. Т. Посохова, С. Л. Соловьева. – М. : АСТ : ХРАНИТЕЛЬ; СПб. : Сова, 2008. – 671 с.
7. Собчик, Л. Н. СМЛ. Стандартизированный многофакторный метод исследования / Л. Н. Собчик. – М. : Речь, 2003. – 219 с.
8. Собчик, Л. Н. Диагностика межличностных отношений. Модифицированный вариант интерперсональной диагностики Т. Лири : метод. рук. / Л. Н. Собчик. – М. : Московский кадровый центр при Главном управлении по труду и социальным вопросам Мосгорисполкома, 1990. – 88 с.

9. Малкина-Пых, И. Г. Психосоматика : справочник практического психолога / И. Г. Малкина-Пых. – М. : Эксмо, 2008. – 563 с.
10. Райгородский, Д. Практическая психодиагностика. Методы и тесты / Д. Райгородский. – М. : Бахрах-М, 2017. – 672 с.
11. Ануфриев, А. Ф. Психологический диагноз / А. Ф. Ануфриев. – М. : Ось-89, 2006. – 192 с.
12. Бодалев, А. А. Общая психодиагностика / А. А. Бодалев, В. В. Столин. – СПб. : Речь, 2000. – 440 с.
13. Фетискин, Н. П. Социально-психологическая диагностика развития личности и малых групп / Н. П. Фетискин, В. В. Козлов, Г. М. Мануйлов. – М. : Изд-во Института психотерапии, 2002. – 490 с.
14. 16-факторный личностный опросник Р. Б. Кеттелла. Форма А. [Электронный ресурс]. – Режим доступа : <http://psycabi.net/testy/293-16-faktornyj-lichnostnyj-oprosnik-r-b-kettellametodika-mnogofaktornyj-oprosnik-kettella-test-kettela187-voprosov-test-ketela-16-pf#ixzz3WT0mku5x>
15. Методика многофакторного исследования личности Кэттелла. [Электронный ресурс]. – Режим доступа : http://psylab.info/Методика_многофакторного_исследования_личности_Кэттелла

References

1. *Daijob.com – Looking for jobs in Japan? Want to work in Japan?*. Available at: <https://www.daijob.com>
2. *Job search on jobs.ch, the leading online job portal on the Swiss market*. Available at: <http://www.jobs.ch/en/vacancies>
3. *Offres d'emploi: Trouvez un emploi avec Jobintree.com*. Available at: <http://www.jobintree.com>
4. *FindJobInfo.com: Job Search*. Available at: <http://findjobinfo.com/>
5. Mironova, E. E. (2005). *Sbornik psikhologicheskikh testov. Ch. I*. Minsk: Zhenskiy institut ENVYLA, 155.
6. Posokhova, S. T., Solov'eva, S. L. (2008). *Nastol'naya kniha prakticheskogo psikhologa*. Moscow: AST: KhRANITEL'; Saint Petersburg: Sova, 671.
7. Sobchik, L. N. (2003). *SMYL. Standartizirovanniy mnogofaktornyj metod issledovaniia*. Moscow: Rech', 219.
8. Sobchik, L. N. (1990). *Diagnostika mezhlchnostnykh otnoshenii. Modifitsirovanniy variant interperson-alnoi diagnostii T. Liri*. Moscow: Moskovskii kadrovyy tsentr pri Glavnom upravlenii po trudu i sotsi-alnym voprosam Mosgorispolkoma, 88.
9. Malkina-Pykh, Y. H. (2008). *Psikhosomatika*. Moscow: Eksmo, 563.
10. Raigorodskii, D. (2017). *Prakticheskaya psikhodiagnostika. Metody i testy*. Moscow: Bakhrakh-M, 672.
11. Anufriev, A. F. (2006). *Psikhologicheskii diagnost*. Moscow: Os'-89, 192.
12. Bodalev, A. A., Stoln, V. V. (2000). *Obshchaia psikhodiagnostika*. Saint Petersburg: Rech', 440.
13. Fetiskin, N. P., Kozlov, V. V., Manuilov, H. M. (2002). *Sotsialno-psikhologicheskaya diagnostika razvitiia lichnosti i malykh grupp*. Moscow: Izd-vo Instituta Psikhoterapii, 490.
14. *16-faktornyj lichnostnyj oprosnik R. B. Kettella. Forma A*. Available at: <http://psycabi.net/testy/293-16-faktornyj-lichnostnyj-oprosnik-r-b-kettella-me-todikamnogofaktornyj-oprosnik-kettella-test-kettela187-voprosov-test-ketela-16-pf#ixzz3WT0mku5x>
15. *Metodika mnogofaktornogo issledovaniia lichnosti Kettella*. Available at: http://psylab.info/Методика_многофакторного_исследования_личности_Кэттелла

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