

Clinical pharmacy in Ukraine according to the healthcare professionals' assessment

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Abstract

An anonymous questionnaire survey among healthcare professionals in Ukraine (n = 10737) showed contradictions in the attitude to the peculiarities of clinical pharmacy compared to a general pharmacy, the relation to the specialists who provide clinical pharmacy services, and the healthcare settings for them. The respondents considered the activity of clinical pharmacist necessary in 74.2%. The community pharmacies were identified as prior professional settings for clinical pharmacists in 55.3%; hospitals – 47.7%, hospital pharmacies – 45.0%. Among the directions of the clinical pharmacist's activity at the hospital, monitoring of drug safety and efficacy was stated by 69.9%, provision of the pharmaceutical care – 50.5%, evaluation of pharmacotherapy – 42.1%, processing of the local drug formulary – 26.8%. The respondents saw prospects for the development of clinical pharmacy in Ukraine in 54.2%. Therefore, there were differences in views on the key issues of clinical pharmacy throughout Ukraine and the insufficient support for its prospects.

Keywords

clinical pharmacy, clinical pharmacist, healthcare professionals' opinion, Ukraine

Introduction

The term "Clinical pharmacy" was introduced in the professional activity of pharmacists with the emphasis on the rational use of medicines for treatment, and results of pharmacotherapy on the contrary to the drug development and manufacturing (Wiedenmayer et al. 2006; Dreischulte and Fernandez-Llimos 2016). The modern definition of clinical pharmacy is inseparable from the rational application of medications (American College of Clinical Pharmacy; European Society of Clinical Pharmacy) within evidence-based medicine approach, the

drug-related problems (DRPs) management (Adusumilli and Adepu 2014), and pharmaceutical care (American College of Clinical Pharmacy). Considering this, the professional activity of clinical pharmacists requires competence in pharmacotherapy, including the use of scientific/clinical evidence for therapeutic decision-making; direct patient care, in particular, drug therapy evaluation, addressing DRPs, monitoring the outcomes of therapeutic plans; communication with patients and other healthcare professionals, etc. (Saseen et al. 2017).

Implementation of the clinical pharmacist service at hospitals provides positive effects on medication use, health service use, and costs (Graabaek and Kjeldsen 2013). Clinical pharmacy interventions in the outpatient or ambulatory setting, primarily continuous or scheduled models via phone, with frequent monitoring, have an overall positive impact on outcomes related to clinical disease management, patient self-management, and adherence (Niznik et al. 2018).

Taking into account the positive experience of the clinical pharmacist professional activity in other countries, in Ukraine, the ratification of Clinical pharmacy as the speciality was legitimized with the relevant documents in 1997–1998 (Cabinet of Ministers of Ukraine 1997; Ministry of Health of Ukraine 1998). It commenced the clinical pharmacists' professional training. Higher education of clinical pharmacists was an important step towards the introduction of clinical pharmacy into healthcare practice. Their professional activity is provided in any healthcare setting where the medications are prescribed and used (European Society of Clinical Pharmacy), Ukrainian normative documents also reflect it (Ministry of Health of Ukraine 2002; Ministry of Education and Science of Ukraine 2004). Since clinical pharmacists work with other professionals as members of the healthcare team (American College of Clinical Pharmacy 2014), the success of clinical pharmacy services depends on their coordination. Therefore, this collaboration ought to consider the awareness and attitude of other healthcare professionals to the concept of clinical pharmacy. It is important for the development and further implementation of clinical pharmacy in Ukraine. Whereas the studying of this issue throughout Ukraine had not been conducted, it defined the purpose of our study.

This study is aimed at detecting the level of awareness and the opinion of healthcare professionals of Ukraine about clinical pharmacy issues.

Materials and methods

Design of the study

Our questionnaire survey was carried out among the healthcare professionals of Ukraine during 2012. There had been no available high-quality questionnaires to adapt, so we designed our own according to the current recommendations (Meadows 2003) using qualification characteristics for clinical pharmacists (Ministry of Health of Ukraine 2002; Ministry of Education and Science of Ukraine 2004a). It was checked for reliability, validity, and internal consistency. Comparison of the results in the pre-tested healthcare professionals group ($n = 23$) with the reference group (experts in clinical pharmacy, $n = 8$) met no significant differences. The pilot survey was provided in three cities (Kyiv, Lviv, and Kharkiv), where the professional training of clinical pharmacists took place (Siatynia et al. 2012). Further, the questionnaires were distributed in all of the regions of Ukraine. In order to make the representative sample and to target healthcare professionals we referred

to the system of the obligatory continuing medical (pharmaceutical) education (CM(P)E) in Ukraine. In 2012 the only legal provider of CM(P)E in Ukraine were the special postgraduate medical high schools (universities) and postgraduate faculties of medical high schools. Each healthcare professional was obliged to take a one-month course at least once in five years and pass a certification exam. Our questionnaires were disseminated in all of the providers of CM(P)E in Ukraine. The academic staff of the postgraduate faculties was instructed to provide this survey among the attendants of CM(P)E courses. Not all of the CM(P)E attendants were covered by the survey since it was not possible to reach and communicate with all the academic instructors. To make a better representation of each of the regions we limited the number of questionnaires in easy-to-access regions such as Lviv (Western Ukraine) and Kharkiv (Eastern Ukraine) and defined the total number of delivered questionnaires to be 14000. In such a way our sample of the surveyed healthcare professionals was representative in each region, but the number of respondents in each region was not precisely proportional to the number of healthcare professionals in the region. The total number of fully completed questionnaires that had been returned equaled 12979 (1021 of questionnaires did not return for the unknown reason). Question about the awareness of clinical pharmacy was taken as an inclusion criterion for the following analysis of the opinion of healthcare professionals. Hence, 2242 questionnaires of respondents unaware of clinical pharmacy issues, were detached. The size of studied data was still significant and allowed making claims about healthcare professionals in Ukraine in the whole.

The anonymous questionnaire included the passport data part (speciality, location etc.) (Table 1), and comprised 14 questions (represented in Table 2) assessing perception of the clinical pharmacy (1–2), specialists who provide clinical pharmacy services (3–5), settings for clinical pharmacy services (6–8), directions of professional activity of clinical pharmacists (9–12), value and prospects of clinical pharmacy in Ukraine (13–14).

Ethics approval

All procedures were performed following ethical standards of the Helsinki declaration and its amendments. The study did not include patients or other vulnerable groups.

Statistical assessment

The statistical analysis of data was carried out with R version 3.4.3 – the programming language and software environment for statistical computing and graphics. The statistical associations between the answers of respondents and their professional and/or demographic features were estimated by comparing frequencies of various responses in groups and calculating odds ratios (OR) as

$$OR = \frac{A_{pos} \times B_{neg}}{A_{neg} \times B_{pos}}$$

where Apos is the number of positive answers in group A, Aneg is the number of negative answers in group A, Bpos is the number of positive answers in group B and Bneg is the number of negative answers in group B. Groups A and B are the sets of respondents that share the common level of nominal variable studied (i.e. males and females for gender variable). The statistical significance was determined with the Chi-squared (χ^2) test. Due to the large sample in the conducted sociological study, even minor differences reached the statistical significance. In these conditions, the most informative indicator was between groups difference expressed as OR. The practical significance or insignificance of the found difference could be elaborated from OR values. When studying the nominal variable with multiple levels, the value of the maximal OR was reported. This maximal OR was the indicator of the difference between the group with the highest proportion of positive answers and the group with the highest proportion of negative answers. Besides that, only the characteristics, for which the difference had some practical importance ($OR > 1.5$ or $OR < 0.67$), were highlighted as the significant ones.

Results

Within the group of respondents aware of clinical pharmacy ($n = 10737$), two thirds (67.2%) were medical practitioners of different specialities, and almost one third (32.4%) – pharmacy specialists (Table 1). The respondents of different education in healthcare were defined as “other specialists” (0.4%). Among all of the specialists with an academic professional degree, 0.5% of respondents had a scientific degree. The share of females (72.1%) outweighed males (27.9%). The age range of the respondents varied from 36 to 59 years (63.9%), one third (33.8%) aged 18 to 35, 2.2% – 60 and over, and 0.1% – not defined.

Despite the awareness of clinical pharmacy, about one-third of the respondents (28.1%) were not sure about the difference between the clinical and general pharmacy (Table 2), 10.9% – did not know it. Therefore, only 61.0% reported knowledge of variance between general and clinical pharmacy. In different regions of Ukraine, we received different statistically significant answers with $p < 10^{-10}$. The affirmative answer among medical practitioners held just 58.1%, in comparison to 66.9% of pharmacists ($OR = 0.76$, $p < 10^{-10}$). Also, the awareness was higher among the spe-

cialists with the scientific degree compared to those without one (77.2% vs 60.9%, $OR = 3.93$, $p = 0.032$). The respondents saw the difference between clinical and general pharmacy in the peculiarities of the specialists’ education (61.8%), focus on the patient (51.6%), in the information on drugs (38.5%), in the DRPs (31.6%), in the pharmaceutical care (29.7%), and in the focus on drugs (20.4%).

The notable share of respondents believed that clinical pharmacy in Ukraine had existed before the introduction of the speciality and training of clinical pharmacists (43.9%). Only 28.3% of respondents attributed its implementation with the approval of the speciality and the professional training of clinical pharmacists, while 27.8% were not sure. The responses to this question varied in different regions of Ukraine with a statistical significance of $p < 10^{-10}$. The clinical pharmacist was considered as a pharmaceutical specialist in 84.2%. A significant share of respondents (45.8%) believed that clinical pharmacist was a “clinician”: among medical practitioners, considerably fewer respondents (40.0%) than among pharmacists (57.4%) supported this statement ($OR = 0.45$, $p < 10^{-10}$).

Less than half of the questioned specialists in Ukraine considered hospitals (47.7%) and hospital pharmacies (45.0%) the prior professional settings for the clinical pharmacist. The university clinics were chosen only in 16.2% of cases. The respondents of Eastern (56.0%), Western (54.9%), and Southern (52.8%) regions supported the professional activity of the clinical pharmacist in the hospital more than in Northern (40.9%) and Central (34.8%) regions (Table 3). The highest OR belonged to the difference between Eastern and Central Ukraine ($OR = 2.39$), in general, the differences in the opinion of respondents in the regions were statistically significant ($p < 10^{-10}$).

The respondents in Ukraine mainly identified community pharmacies as prior professional settings for clinical pharmacists (55.3%). It got a strong support in Central region (75.3%), the highest OR refers to Eastern vs Central Ukraine ($OR = 0.29$, $p < 10^{-10}$). The notable share of respondents (66.0%) agreed that clinical pharmacy development would increase the social function of the community pharmacies as the healthcare settings and that the activity of a clinical pharmacist there would bring practical pharmacy closer to the clinical practice (60.8%). These statements were better supported among pharmacists than medical practitioners ($OR = 1.57$ and $OR = 2.00$, the difference between groups was statistically significant, $p < 10^{-10}$).

Table 1. The distribution of healthcare professionals involved in the study in accordance with region and specialization.

| Regions of Ukraine: specified | Number of respondents (%) | | | Total |
|---|---------------------------|--------------------|-------------------|----------------------|
| | Medical practitioners | Pharmacists | Other specialists | |
| Northern: Chernihiv, Kyiv, Sumy, Zhytomyr regions | 1632 (15.2) | 734 (6.8) | 30 (0.3) | 2396 (22.3) |
| Western: Chernivtsi, Ivano-Frankivsk, Khmelnytsky, Lviv, Rivne, Ternopil, Volyn, Zakarpattia regions | 2428 (22.6) | 1069 (10.0) | 7 (< 0.1) | 3504 (32.6) |
| Central: Cherkasy, Dnipropetrovsk, Kirovohrad, Poltava, Vinnytsia regions | 1279 (11.9) | 790 (7.4) | – | 2069 (19.3) |
| Eastern: Donetsk, Kharkiv, Luhansk regions | 920 (8.6) | 240 (2.2) | 6 (< 0.1) | 1166 (10.9) |
| Southern: AR of Crimea, Kherson, Mykolaiv, Odesa, Zaporizhia regions | 951 (8.9) | 649 (6.0) | 2 (< 0.1) | 1602 (14.9) |
| Total | 7210 (67.2) | 3482 (32.4) | 45 (0.4) | 10737 (100.0) |

Table 2. The results of the healthcare professionals' questioning on the clinical pharmacy issues.

| № | Questions | Answers | | |
|--|--|---------|-------|----------|
| | | Yes | No | Not sure |
| The field of clinical pharmacy | | | | |
| 1. | Do You know the difference between general and clinical pharmacy? | 61.0% | 10.9% | 28.1% |
| 2. | *The difference between clinical and general pharmacy is in: | | | |
| | peculiarities of the specialists' education | 61.8% | | |
| | focus on the patient | 51.6% | | |
| | information on drugs | 38.5% | | |
| | DRPs | 31.6% | | |
| | pharmaceutical care | 29.7% | | |
| | focus on drugs | 20.4% | | |
| Specialists who provide clinical pharmacy services | | | | |
| 3. | In Your opinion, did clinical pharmacy exist in Ukraine before the speciality introduction and the establishment of clinical pharmacist' professional training? | 43.9% | 28.3% | 27.8% |
| 4. | Do You consider clinical pharmacist a pharmaceutical specialist? | 84.2% | 11.2% | 4.6% |
| 5. | Do you consider clinical pharmacist a clinician? | 45.8% | 46.8% | 7.4% |
| Settings for clinical pharmacy services | | | | |
| 6. | *In Your opinion, what place of work for clinical pharmacist should be prior? | | | |
| | community pharmacy | 55.3% | | |
| | hospital | 47.7% | | |
| | hospital pharmacy | 45.0% | | |
| | medical insurance company | 28.6% | | |
| | university clinic | 16.2% | | |
| 7. | Do You agree that the development of clinical pharmacy will increase the social function of the community pharmacies, as the healthcare settings? | 66.0% | 14.4% | 19.6% |
| 8. | In your opinion, will the activity of the clinical pharmacist at a community pharmacy bring practical pharmacy closer to the clinical practice? | 60.8% | 25.9% | 13.3% |
| The directions of professional activity of the clinical pharmacists | | | | |
| 9. | In Your opinion, should the professional responsibilities of the clinical pharmacist of the hospital differ from those of the general pharmacy specialist? | 74.0% | 16.3% | 9.7% |
| 10. | In Your opinion, should the professional responsibilities of the clinical pharmacist at the community pharmacy differ from those of the general pharmacy specialist? | 73.9% | 15.3% | 10.8% |
| 11. | *What directions in the professional activity of the clinical pharmacist at the hospital do You consider prior? | | | |
| | drug safety and efficacy monitoring | 69.9% | | |
| | provision of the pharmaceutical care | 50.5% | | |
| | evaluation of pharmacotherapy based on the inpatient prescription papers | 42.1% | | |
| | participation in processing and updating of the local drug formulary | 26.8% | | |
| 12. | Do You consider the possibility of professional cooperation with the clinical pharmacist useful for a medical practitioner? | 68.5% | 22.8% | 8.7% |
| The value and prospects of clinical pharmacy in Ukraine | | | | |
| 13. | Do You consider the professional activity of the clinical pharmacist in the healthcare system of Ukraine necessary? | 74.2% | 13.7% | 12.1% |
| 14. | In Your opinion, are there prospects for clinical pharmacy in Ukraine? | 54.2% | 15.4% | 30.4% |

*There may be several answers to the question

Table 3. The prior settings for the provision of services by the clinical pharmacists.

| Regions of Ukraine | Number of respondents (%) | | | | |
|--------------------|---------------------------|--------------------|--------------------|--------------------|---------------------------|
| | Hospital | Hospital pharmacy | University clinic | Community pharmacy | Medical insurance company |
| Northern | 979 (40.9) | 1032 (43.1) | 200 (8.3) | 1317 (55.0) | 483 (20.2) |
| Western | 1922 (54.9) | 1650 (47.1) | 640 (18.3) | 1732 (49.4) | 1229 (35.1) |
| Central | 719 (34.8) | 890 (43.0) | 259 (12.5) | 1557 (75.3) | 519 (25.1) |
| Eastern | 653 (56.0) | 468 (40.1) | 294 (25.2) | 544 (46.7) | 353 (30.3) |
| Southern | 846 (52.8) | 797 (49.8) | 342 (21.3) | 785 (49.0) | 486 (30.3) |
| Total | 5119 (47.7) | 4837 (45.0) | 1735 (16.2) | 5935 (55.3) | 3070 (28.6) |

Considering other options for employing the clinical pharmacist, more than a quarter of respondents in Ukraine (28.6%) saw it in the medical insurance companies.

The majority of questioned healthcare specialists in Ukraine considered that professional responsibilities of

the clinical pharmacist should differ from the responsibilities of the general pharmacist in the hospitals (74.0%) and the community pharmacies (73.9%). The directions of the clinical pharmacist's activity at the hospital were considered as follows: the monitoring of drug safety and

Table 4. The necessity of the professional activity of the clinical pharmacist in the healthcare system.

| Regions of Ukraine | Number of respondents (%) | | | Total |
|--------------------|---------------------------|--------------------|--------------------|----------------------|
| | Yes | No | Not sure | |
| Northern | 1746 (72.9) | 442 (18.4) | 208 (8.7) | 2396 (100.0) |
| Western | 2798 (79.9) | 319 (9.1) | 387 (11.0) | 3504 (100.0) |
| Central | 1412 (68.2) | 386 (18.7) | 271 (13.1) | 2069 (100.0) |
| Eastern | 873 (74.9) | 137 (11.7) | 156 (13.4) | 1166 (100.0) |
| Southern | 1138 (71.0) | 185 (11.6) | 279 (17.4) | 1602 (100.0) |
| Total | 7967 (74.2) | 1469 (13.7) | 1301 (12.1) | 10737 (100.0) |

Table 5. The prospects of clinical pharmacy development.

| Regions of Ukraine | Number of respondents (%) | | | Total |
|--------------------|---------------------------|--------------------|--------------------|----------------------|
| | Yes | No | Not sure | |
| Northern | 1198 (50.0) | 447 (18.7) | 751 (31.3) | 2396 (100.0) |
| Western | 2105 (60.1) | 506 (14.4) | 893 (25.5) | 3504 (100.0) |
| Central | 832 (40.2) | 280 (13.5) | 957 (46.3) | 2069 (100.0) |
| Eastern | 785 (67.3) | 172 (14.8) | 209 (17.9) | 1166 (100.0) |
| Southern | 903 (56.4) | 242 (15.1) | 457 (28.5) | 1602 (100.0) |
| Total | 5823 (54.2) | 1647 (15.4) | 3267 (30.4) | 10737 (100.0) |

efficacy – 69.9%, the evaluation of pharmacotherapy based on prescription papers – 42.1%, the participation of the clinical pharmacists in processing and updating of the local drug formulary – 26.8%. The healthcare specialists in Ukraine also paid little attention to pharmaceutical care (50.5%). Herewith, 68.5% considered professional cooperation with a clinical pharmacist as useful for a medical practitioner.

The respondents found the professional activity of clinical pharmacist in the healthcare system of Ukraine necessary (74.2%). The highest OR related to the Western vs Central regions of Ukraine (OR = 2.40). In general, the attitude to this question varied by regions with statistical significance, $p < 10^{-10}$ (Table 4). Among the specialists who supported this, the bigger share belonged to pharmacists (77.0%) as compared to medical practitioners (72.9%) (OR = 1.56, $p < 10^{-10}$). However, 12.1% of all respondents were not sure, and 13.7% expressed an objection.

The prospects of clinical pharmacy development in Ukraine were presumed by 54.2% of respondents. Almost one-third of them were not sure (30.4%), while 15.4% gave a negative answer. Professionals from the Eastern (67.3%) and Western (60.1%) regions were more inclined to see the prospects for clinical pharmacy in Ukraine. The highest OR related to Eastern vs Northern Ukraine (OR = 1.70), the opinion between regions varied with the statistical significance of $p < 10^{-10}$ (Table 5).

Discussion

Regardless of the awareness of clinical pharmacy in Ukraine, only 61.0% of respondents had an opinion about the difference between general and clinical pharmacy. The most frequent divergence criteria mentioned by the respondents were peculiarities of the specialists' education

(61.8%). It complies with the concept of clinical pharmacy. At the stage of clinical pharmacy establishment as a direction in medicine, a great many healthcare professionals and educators advocated a clinical role for those pharmacists who were educated and trained to function in areas of drug related patient-care (Hutchinson and Burkholder 2006). Modern clinical pharmacy implies a necessity of understanding the disease, the ability to evaluate and interpret physical and laboratory data, the expert knowledge of pharmacotherapy, the communicative skills, and monitoring the effect of medications etc. (Wiedenmayer et al. 2006; Saseen et al. 2017) which found its reflection in the state standards of education in clinical pharmacy in Ukraine (Ministry of Education and Science of Ukraine 2004a; Ministry of Education and Science of Ukraine 2004b).

The thesis about the divergence of clinical pharmacy consisting in the information about medications was supported by 38.5% of respondents. Indeed, the professional responsibilities of pharmacist evolved from the moderator, and supplier of the pharmaceutical goods into the information and service provider. The provided information must be impartial, relevant, and evidence-based on the reliable sources (Wiedenmayer et al. 2006). At the stage of clinical pharmacy establishment, such activity was considered as one of the most important contributions into the patient's care (Hutchinson and Burkholder 2006).

Eventually, the pharmacist has become the specialist who directly performs the patient's care (Wiedenmayer et al. 2006; American College of Clinical Pharmacy 2014; Saseen et al. 2017). Focus on the patient, as the divergence criterion between clinical and general pharmacy, was mentioned by 51.6% of respondents. However, 20.4% saw the difference in the focus on the medications, which more likely related to the general pharmacy. The attention of Ukrainian specialists to this question was insufficient. For comparison – focus on the patient in clinical phar-

macy was supported by 86.0% of respondents in the investigation of the European Society of Clinical Pharmacy (ESCP) (Dreischulte and Fernandez-Llimos 2016).

Patient-centered clinical pharmacy is implemented in particular by clinical pharmacist detecting drug-related needs, and problems with their further solution (American College of Clinical Pharmacy 2014; Saseen et al. 2017). According to our research, the difference between general and clinical pharmacy in the aspect of DRPs was perceived only by 31.6% of respondents. The opinion that the difference lied in the pharmaceutical care was shared by 29.7%. In fact, the concept of DRPs is a part of the integrated system of pharmaceutical care (Hepler and Strand 1990; van Mil 2005; Zimenkovsky et al. 2011; van Mil et al. 2019). However, only 14.0% of respondents mentioned both concepts, so other professionals were wrong not to consider them as components of the whole. That is why there still exists the need for informing the healthcare specialists of Ukraine about these issues to reach a deep understanding of the paradigm for clinical pharmacy.

As of 2012 in Ukraine, the specialists in clinical pharmacy were trained from the first level of education in 1 pharmaceutical and 6 medical high schools (universities). However, only 28.3% of respondents linked the introduction of clinical pharmacy to the ratification of the speciality and the establishment of clinical pharmacists' training, and 27.8% were not sure. The considerable share of respondents (43.9%) stated that clinical pharmacy had existed before the ratification of the speciality, therefore clinical pharmacy services could be provided by other healthcare professionals. It indicated the absence of the common opinion in Ukraine, which was confirmed by the statistically significantly different answers to this question in the regions ($p < 10^{-10}$). Same controversies about the specialists were proven by the ESCP investigation that detected the conviction of pharmacists' capacity for bringing the duty (97.0%) and that it could not be provided by the informal caregivers, as relatives (93.1%) (Dreischulte and Fernandez-Llimos 2016). Nevertheless, a contradiction still existed in the opinion whether the other healthcare professionals could do it. In the ESCP study, 74.8% of the respondents disagreed to it (Dreischulte and Fernandez-Llimos 2016).

The training of clinical pharmacists in Ukraine is based on higher pharmaceutical education, although only 84.2% of respondents perceived them as pharmaceutical specialists. A significant share of answers (45.8%) tended clinical pharmacist as a clinician. In order to evaluate the results, it is necessary to interpret the term "clinical" which is influenced by the cultural and political context (Dreischulte and Fernandez-Llimos 2016). Since it defines the professional responsibilities in the area of patient's care (Hutchinson and Burkholder 2006), and health (European Society of Clinical Pharmacy), the application of knowledge about medications for resolution and prevention of DRPs is pharmacists' clinical duty, similar to the specialized clinical responsibilities of other healthcare professionals (Hutchinson and Burkholder 2006). Conse-

quently, the clinical pharmacist is a pharmaceutical specialist who has clinical responsibilities.

Clinical pharmacists are the specialists who provide the care of patients in the healthcare settings of all types (American College of Clinical Pharmacy 2014; European Society of Clinical Pharmacy). As the term "clinical" not necessarily points the activity within a hospital (European Society of Clinical Pharmacy), clinical pharmacy is not the synonym for the hospital pharmacy (Franklin and van Mil 2005), and pharmacists may provide the service at the community pharmacies as well. In Ukraine, almost half of professionals considered hospitals (47.7%) and hospital pharmacies (45.0%) as the prior place of work for clinical pharmacists. However, the ESCP study showed the strong agreement to the provision of clinical pharmacy services at the hospital ward or an outpatient clinic (96.5%), and at the hospital pharmacy (92.7%) (Dreischulte and Fernandez-Llimos 2016). In Ukraine, the majority indicated the community pharmacies as prior professional settings for clinical pharmacists (55.3%). The ESCP study reported different results, detecting the controversies in providing the clinical pharmacy services within the community pharmacy. This statement was supported by only 29.3% (Dreischulte and Fernandez-Llimos 2016). The other options for employing clinical pharmacists in Ukraine included medical insurance companies according to more than a quarter of respondents (28.6%). There were controversies among the ESCP members about the community-based conditions of the clinical pharmacist's activity as well (Dreischulte and Fernandez-Llimos 2016).

The prior activity of clinical pharmacists at the hospitals was considered by the respondents as follows: monitoring of safety and efficacy of medications – 69.9%, assessment of pharmacotherapy based on the inpatient records – 42.1%, participation in elaboration and updating of the local formulary – 26.8%. Therefore, according to the prevailing opinion in Ukraine, the support for medications use rationalization by the clinical pharmacist was not very high. For comparison, according to the ESCP members, the professional activity in clinical pharmacy included drug therapy optimization on both patient (93.2%) and healthcare provider (87.5%) levels, laboratory monitoring of drug therapy (93.5%), treatment individualization (93.9%), and covered managing an individual's drug therapy (86.7%) (Dreischulte and Fernandez-Llimos 2016).

Pharmaceutical care lacked attention of healthcare specialists in Ukraine (50.5%), compared to experts in the ESCP study, who were quite unanimous about ensuring the accurate drug history and transfer of information (88.2%), the informative (87.1%), and compassionate (81.0%) counseling (Dreischulte and Fernandez-Llimos 2016). Despite that, 68.5% of healthcare specialists in Ukraine considered the possibility of professional cooperation with the clinical pharmacist as useful for the medical practitioner.

The separate questions referred to the significance and prospects of clinical pharmacy. In countries other than Ukraine, clinical pharmacist, as a member of the medical team, successfully works with the other healthcare spe-

cialists for high quality, coordinated, and patient-centered care (American College of Clinical Pharmacy 2014). That is why we find the attitude of the other healthcare specialists to the clinical pharmacist important. In our survey, 74.2% of respondents considered the activity of clinical pharmacist in the healthcare system of Ukraine as necessary. Herewith, 12.1% were not sure, and 13.7% shared a negative opinion. Such an attitude of the healthcare specialists discourages the clinical pharmacist's activity and requires a more detailed investigation of its reasons. With regard to the prospects for clinical pharmacy in Ukraine, only half of the respondents (54.2%) perceived them. Almost one-third of the respondents did not know the answer (30.4%), while 15.4% were negative about it. The lack of support for the prospects of clinical pharmacy and the professional activity of clinical pharmacist by other healthcare professionals makes it necessary to work on the contemporary model of development for clinical pharmacy in Ukraine. It will make the basis for the rational use of medicines. We expect that the questionnaire served as the promotion of clinical pharmacy in Ukraine as it attracted the attention of healthcare professionals to its issues.

Limitations

Our study is well-powered being based on 12979 completed questionnaires. The response rate in this study was 92.7%. However, after the distribution of the questionnaires,

1021 of them (7.3%) did not return for the unknown reasons. We cannot expect that missed answers were missed at random. The respondents who denied filling of the questionnaires could have a rather skeptic opinion about clinical pharmacy in Ukraine. Furthermore, the rate of the negative answers to the exclusion-question about the awareness of clinical pharmacy resulted in the withdrawal of as much as 17.3% of the general share of the completed questionnaires.

Conclusion

Despite the awareness of clinical pharmacy by the healthcare professionals of Ukraine, the level of their perception of the clinical pharmacy principals and services was relatively low. Contradictions were found regarding the settings of clinical pharmacy services and speciality of the professional who ought to provide them. This also met significant diversity in the answers throughout different regions of Ukraine. Our findings indicate that the support for the perspectives of clinical pharmacy and professional activity of clinical pharmacist in Ukraine is insufficient.

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