Original Article

Usage of various methods of training pharmaceutical specialists in the Far Eastern Federal District

Mariia Sergeevna Soboleva[1]*, Irina Vladimirovna Amelina[2], Svetlana Yuryevna Meshalkina[3]

[1]Department of Pharmacy and Pharmacology, Faculty of Pharmacy and Biomedicine, Far Eastern State Medical University, Khabarovsk, Russian Federation. [2]Department of Organization and Economics of Pharmacy, Faculty of Pharmacy and Biomedicine, Far Eastern State Medical University, Khabarovsk, Russian Federation. [3]Department of Organization and Economics of Pharmacy, Faculty of Pharmacy and Biomedicine, Medico-Pharmaceutical College, Far Eastern State Medical University, Khabarovsk, Russian Federation.

Correspondence: Mariia Sergeevna Soboleva, Department of Pharmacy and Pharmacology, Faculty of Pharmacy and Biomedicine, Far Eastern State Medical University, Khabarovsk, Russian Federation. martimser@mail.ru

ABSTRACT

Professional pharmaceutical services require appropriate specialist training. In the context of the modern development of information technologies, the integration of science and practice, it is advisable to use not only traditional but also interactive and remote teaching methods. Analysis of the application of different methods of training for mastering the specialty "Pharmacy." **S**ociological poll of students of the Far Eastern State Medical University - one of the oldest and largest educational institutions in the Far East of Russia, the Faculty of Pharmacy and Biomedicine, as well as students of the Medical-Pharmaceutical College. The total sample was 267 respondents. Statistical processing was performed using the non-parametric Mann-Whitney U test, the Spearman's rank correlation coefficient. The most popular are classical teaching methods - lectures, seminars, practical and laboratory lessons. Among the interactive methods, lectures with visualization of the provided information, a question-answer lecture, and a "press conference" lecture, as well as the organization of discussions and analysis of situational tasks, are most often used. Among the distance learning methods, the most used are work on the educational portal and online testing. For respondents receiving higher education, classroom work in any of its forms is more common, and for students receiving secondary education, more attention is paid to the practice and the format of the "question-answer" class, which can be explained by the short duration of the study. Interactive and distance learning methods, despite their advantages, are underutilized in the educational process, especially for secondary students.

Keywords: Pharmacy, Education, Traditional training, Interactive classes, Remote technologies

Introduction

The pharmaceutical specialist is one of the full participants in the treatment of patients. The release and sale of drugs and other products of the pharmacy assortment, the examination of the prescription, as well as pharmaceutical consultation, are the main labor functions of the "first table workers" and, of course, their professional implementation requires appropriate training. Historically, there are several approaches to pharmaceutical education in the world. For example, in the countries of Central and Eastern Europe and Scandinavia, special attention is paid to the chemical sciences, in the Franco-Italian-Spanish school, preference is given to the medico-biological disciplines [1].

The basis of any specialized training is traditional methods - "classical" lectures, seminars, laboratory classes. However, given the necessity and expediency of integrating the educational process with the practical activities of [2, 3], the use of interactive [4] and remote technologies [5-8] is increasing. The advantage of the indicated training methods is the possibility of developing personal qualities [9] necessary for a specialist, awareness of responsibility for the results of activities [10], strengthening didactic and laboratory concepts in professional knowledge [11], developing skills in team

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management, resource allocation, dynamic decision making [12].

In the Russian Federation, the specialty "Pharmacy" can be mastered by students in higher or secondary education and implies further systematic improvement of qualifications, which requires continuity, orientation to practical activities, and a competency-based approach [13]. Subsequently, the rating of the educational institution and the quality of the education received are often competitive advantages in employment [14].

The Far Eastern Federal District (FSD) is geographically the most remote from the central part of Russia, as well as the largest in the territory and sparsely populated. Nevertheless, according to the analytical agency AlphaRM (2018), it was in it that the largest number of pharmacy institutions (5.3) per 10 thousand people was observed [15]. The current situation requires enough pharmaceutical specialists in the regions. The oldest and largest university that trains pharmaceutical workers for all regions of the FSD is the Far Eastern State Medical University (FESMU). Training of specialists with higher education in the specialty "Pharmacy" is carried out at the Faculty of Pharmacy and Biomedicine, and specialists with secondary education at the Medico-Pharmaceutical College. In the educational process, both traditional and interactive, and remote technologies are implemented based on FESMU. The purpose of the study was to analyze the application of various methods of training in the specialty "Pharmacy."

Materials and Methods

Sociological poll of students of the FESMU Faculty of Pharmacy and Biomedicine (higher education, term of study 5 years) in the specialty 33.05.01 "Pharmacy" (n = 140), as well as students of the medico- pharmaceutical college (secondary education, term of study 2 years 10 months) in the specialty 33.02.01 "Pharmacy" (n = 127). The total sample was 267 respondents. The survey was conducted using the questionnaire method using the Google Forms service (https://www.google.ru/intl/ru/forms/about/), the primary material was processed in Microsoft Excel 365, using the "Data Analysis" package - descriptive statistics. Statistical processing of the obtained data was carried out using IBM SPSS Statistics 25. Comparison of the two independent samples was performed using a non-parametric Mann-Whitney U test. The null hypothesis about distribution equality deviated at an asymptotic significance of less than 0.05. The correlation of different learning methods with the level of education received was calculated using Spearman's rank correlation coefficient. The correlation was considered valid with significance (two-sided) less than 0.05. The upper and lower limits were calculated for the correlation coefficient. To assess the reliability of the questionnaire, Cronbach's alpha was calculated. The number of items for analysis (responses options) was 26. The obtained value $\alpha = 0.748$, which is sufficient, when conducting a sociological survey.

Results and Discussion

Educational organizations that train pharmaceutical specialists actively use traditional teaching methods in the educational process. The distribution of respondents' responses is shown in **Figure 1**.

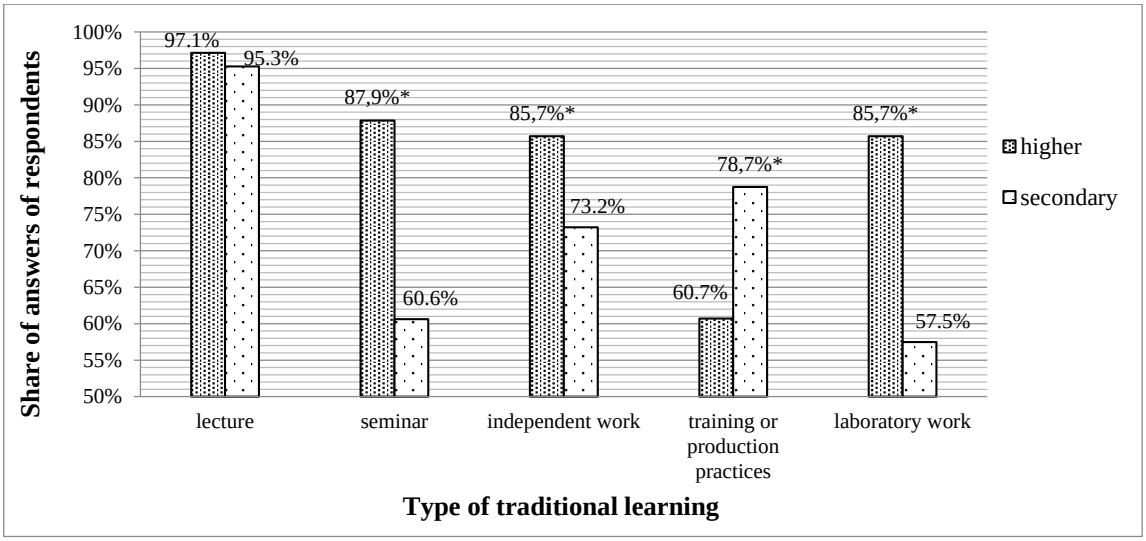

Figure 1. Distribution of respondents' responses about traditional methods of learning in the specialty "Pharmacy"
* - p < 0,05 - differences and correlation with training level are statistically significant

The most "classical" form of training is a lecture. More than 95% of respondents attend this type of class. Seminar classes in the form of "question-answer" are more often held for students receiving higher education. In the process of preparing a specialist, a very significant role is always assigned to independent work and preparation for practical lessons. This type of activity is used by more than 70% of respondents, and university students are also more responsible for this format of work. Future secondary specialists attach more importance to educational or pharmaceutical practice - the difference in the

proportion of respondents who chose this option is more than 18%. Full training of pharmacy workers, including professional disciplines (pharmaceutical technology, chemistry, pharmacognosy, and phytochemistry), is carried out in a specialized laboratory, however, less than 60% of college students chose this option. Statistically significant differences and correlation with the level of education received were observed by responses: seminar ($p = 0.001$; $_{0.201}0.314_{0.418}$ $p = 0.001$); independent work ($p = 0.011$; $_{0.035}0.155_{0,270}$ $p = 0.011$); training or production practice ($p = 0.001$; $_{0.076}0.195_{0.307}$ $p = 0.001$); laboratory classes ($p = 0.001$; $_{0.202}0.315_{0.419}$ $p = 0.001$).

Interactive teaching methods imply the active inclusion of students as full-fledged participants in the educational process. This form can be implemented not only in a practical lesson but also in lectures. The distribution of respondents' responses about interactive lectures is shown in **Figure 2**.

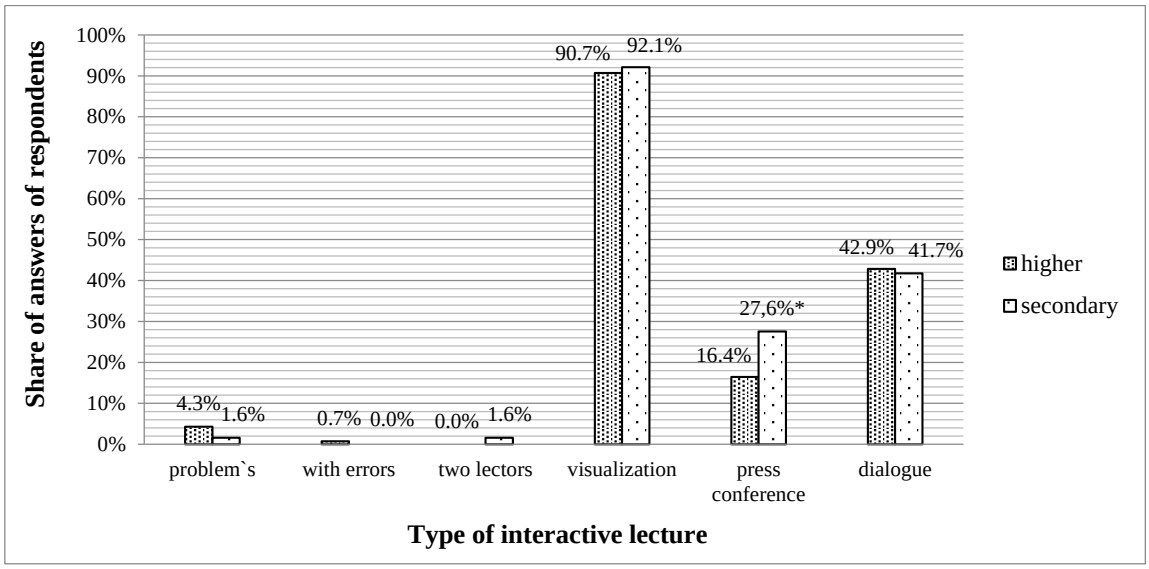

Figure 2. Distribution of respondents' responses about interactive lecture in the specialty "Pharmacy"
* - p < 0,05 - differences and correlation with training level are statistically significant

The least popular type is lecturing on a specific problem, lectures with pre-made errors to search by students, as well as lectures by two lecturers - less than 5% of respondents' answers. More than 90% of respondents attend lectures, which were performed with presentations and video materials. Lectures in the form of a question from a student - the answer from a teacher is more often held when teaching students at a medico-pharmaceutical college. The share of respondents' responses to the lecture dialogue between the student and the teacher was comparable and amounted to about 42%. Statistically significant differences and correlation with the level of education received were observed by the responses: a lecture press conference ($p = 0.028$; $_{0,015}0,135_{0,251}$ $p = 0.028$).

Another type of interactive learning is practical classes. The distribution of respondents' responses to this type of activity is shown in **Figure 3**.

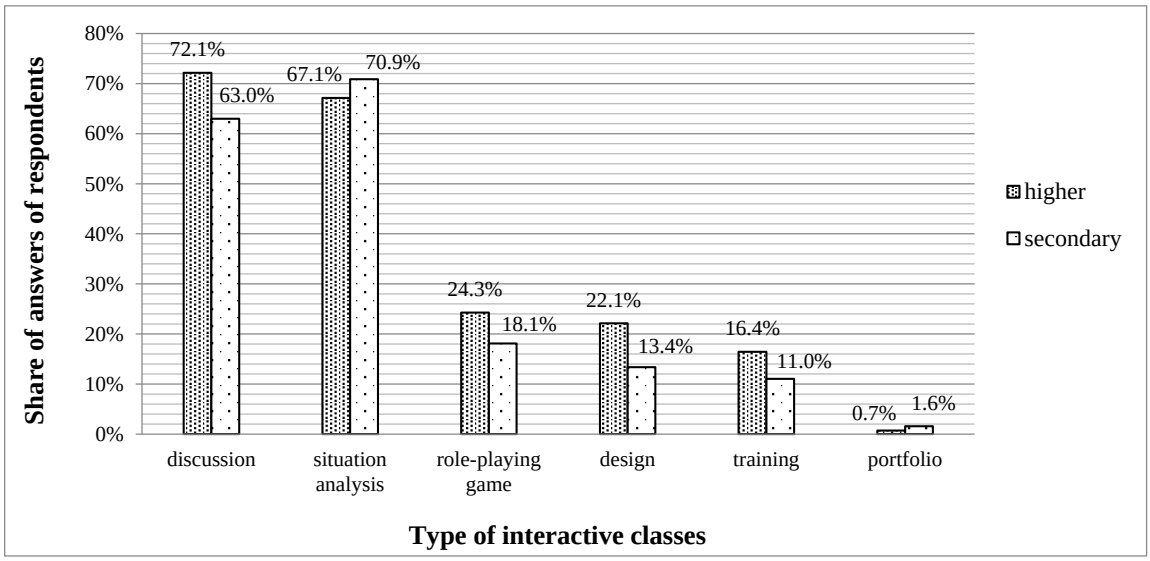

Figure 3. Distribution of respondents' responses about interactive classes in the specialty "Pharmacy"

The most common types are discussion and analysis of a specific situation. More than 60% of respondents participated in such classes. Role-playing games and design are less feasible at the FESMU - less than 25% of students in specialty Pharmacy attended such classes. Less than 16% and 2% of surveyed students have experience in training and portfolio creation, respectively.

A distant form of study, implying the remote training of disciplines by students, implies active communication, using online technologies. Especially this form of training was in demand in 2020 in connection with the epidemic of COVID-19 [16, 17]. The distribution of respondents' responses regarding participation in different types of classes is shown in **Figure 4**.

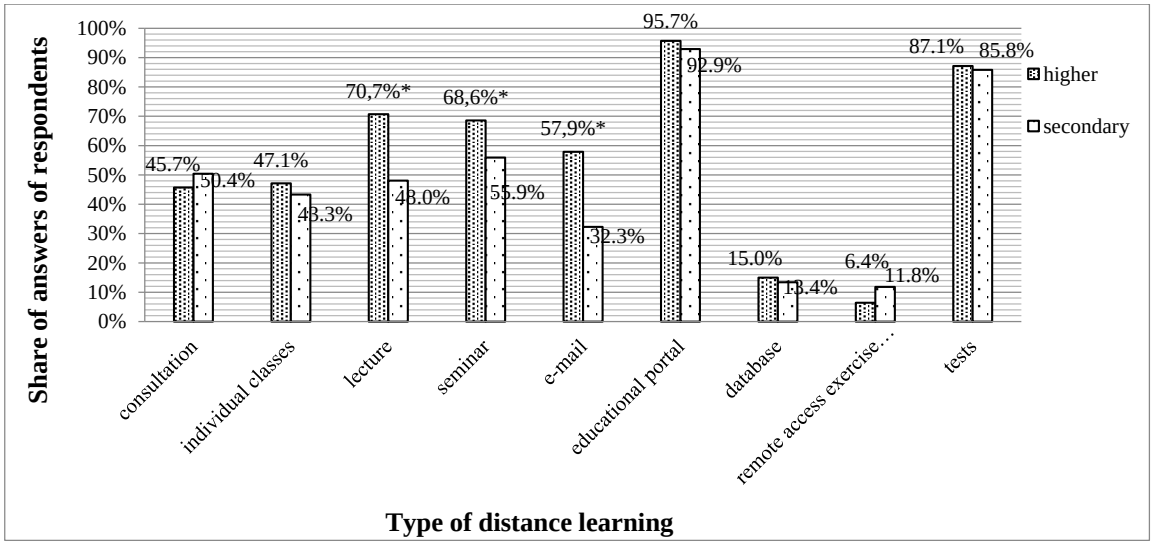

Figure 4. Distribution of respondents' responses about distance methods of learning in the specialty "Pharmacy"
* - $p < 0,05$ - differences and correlation with training level are statistically significant

More than 90% of respondents studied remotely using the FESMU educational portal and more than 85% of respondents underwent knowledge control using online testing. Other most popular methods of distance learning were online lectures and seminars, as well as communication with the teacher by e-mail - from 71% to 58% of students receiving higher education and from 32% to 56% of students receiving secondary education. Only about 50% of students participated in group and individual consultations. The least used remote training methods were working with databases and online simulators with remote access - less than 15%. Statistically significant differences and correlation with the level of education received were observed the by responses: online lecture ($p = 0.001$; ${}_{0.114}0.231_{0.342}$ $p = 0.001$); online workshop ($p = 0.033$; ${}_{0.011}0.131_{0.247}$ $p = 0.028$); e-mail ($p = 0.001$; ${}_{0.138}0.254_{0.363}$ $p = 0.001$).

Among traditional teaching methods, lectures have always been a mandatory section of the educational process and discipline program, as confirmed by the respondents' answers. Of course, a detailed explanation of the material by professors is necessary for understanding the students and is the basis of communication for obtaining a high-quality education. The more frequent choice of seminars, independent work, and laboratory classes by students receiving higher education, compared to students of the medico-pharmaceutical college, can be due to the large number and variety of professional disciplines and longer-term education of university students. The orientation of secondary education students directly to work with visitors to drugstores confirms the frequency of choice of pharmaceutical or educational practices.

The most implemented interactive forms of the lecture are reading material using presentations/videos. The obtained result is natural in connection with the obligation to carry out this type of activity for teachers precisely using the capabilities of multimedia and information visualization to improve students' understanding. The "press conference" lecture is more often held with students receiving secondary education due to the shorter course of study and the need for students to get answers to questions related directly to practical activities. The lecture dialogue is a rather rare activity of respondents in connection with the need for preliminary training of students for this format of the classes.

Interactive practical lessons in the form of discussions and solving situational problems with discussion are aimed primarily at the formation of logical thinking and the skill of working directly with patients, therefore they are in demand in the educational process. Role-playing games with situation staging and design require creativity among students and demonstration of the skill in the presence of colleagues, so many students are experience uneasiness. Nevertheless, these activities are necessary for the formation of communications, so it is rational to expand the use of these forms of interactive learning in the educational process. This is especially relevant in connection with the transition to accreditation of specialists. A small proportion of respondents' answers about the training and the experience in creating a portfolio - can be explained by the orientation of this type of classes to postgraduate training and advanced training.

The forced transition of training to a remote format demonstrated the possibilities of the educational process in the

conditions available to the educational organization. Given the presence of its server "Educational Portal" with the possibility of testing, these types of activities have become the most common. However, lectures and seminars, consultations and classes conducted online, especially for students of the medico-pharmaceutical college, were not in demand. The current situation can be explained by the difficulties of technical implementation, both for students and teachers, especially older ones, as well as by the "tight" schedule of classes, which is quite difficult to combine with working students. The low demand for working with databases and simulators can be explained by the need to develop appropriate software and information bases, which requires significant time and labor resources and again technical training of faculty.

Conclusion

Despite the availability of modern opportunities for simulated and interactive training, traditional methods (lectures, seminars, practice, laboratory classes) are the most popular in the educational process among students with a specialty in Pharmacy. In higher education respondents, classroom work is more common, and in secondary education students, more attention is paid to practice, which can be explained by the shorter duration of the study. Among interactive lectures, the most often used is the visualization of information in the form of presentations, regardless of the level of education, which is associated with their mandatory for FESMU. The "press conference" lecture is more common among medico-pharmaceutical college students in connection with the orientation of graduates to work directly with the population. The most frequent form of interactive practical lessons is the discussion and analysis of situational tasks, due to their simplicity and accessibility. The possibilities of distance learning methods have not been fully utilized in the educational process, especially for students receiving secondary education, which requires more active development of this direction in the future.

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