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IMPROVING TRAINING OF PHARMACEUTICAL SPECIALISTS FOR CONSULTATION IN PHARMACY ORGANIZATIONS USING INTERACTIVE FORMS OF EDUCATION

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ABSTRACT

Introduction: The introduction of practice-oriented learning implies the use of both traditional academic and experimental creative techniques as well as competency-based approaches. The aim of the study: was to assess the effectiveness of training students based on protocols of primary accreditation before and after the introduction of the discipline using interactive forms of training. Materials and methods: A comparative analysis of the results of the second stage of primary accreditation of graduates of Far East State Medical University with a specialty "Pharmacy," before (2016) and after (2019) the introduction of discipline (n=101) in the students of full-time and correspondence courses. Results: The proportion of satisfactory responses of accredited increased by 21 estimated parameters out of 24. The most demonstrative indicators are parameters: "Explanation of pharmacological action" by 14%; "Offering over-the-counter drugs" by 21%; "Justification of proposed drugs" by 29%; and "Professionalism" by 9%. There was a 2% decrease in the frequency of reminders of the visit to medical specialists. Discussion: Improving accredited responses proves an increase in the qualification of specialists, and a decrease in the number of mentions, about visiting a doctor, demonstrates the expediency of standardizing the algorithm of consultations taking into account the compliance of patients. Conclusion: Introduction of the discipline "Pharmaceutical consultation" using interactive methods of education allowed to improve the quality of preparation of specialists for future work with patients in pharmacy organizations, as well as to justify the expediency of a practical approach to the educational process in the specialty "Pharmacy".

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Introduction

Pharmacy and Pharmacists play an essential part of well-being and health care [1]. In the conditions of the growth and expansion of the range of products represented on the modern pharmaceutical market, as well as the increase in the workload on pharmacy workers, one of the mandatory conditions for the provision of quality drug assistance is the improvement of services presented to visitors [2-5]. With the entry into force of Order № 647n of the Ministry of Health of the Russian Federation of 31 August 2016 "On Approval of the Rules of Good Pharmacy Practice of Medicines for Medical Use," one of the mandatory components of pharmaceutical care was the consultation of patients about the use of drugs. Professional provision of information implies continuous training of specialists, as well as advanced training in this field [6, 7]. The national and foreign literature contains data of numerous studies devoted to intensification and improvement of the quality of training in the specialty "Pharmacy." For example, the possibility of "combining the efforts of specialists in professions and faculty of educational institutions" to improve the process of education is being considered [8]. Practical workers note of "the gap between science, education, and production, as well as the low innovative activity of working enterprises" [9], which certainly requires a practical orientation of training. At the same time, the formation of "ethics of the profession, the integrity of personality and worldview, and culture" is essential [10].

Existing problems in pharmaceutical education (shortage of personnel and production bases, break of theory and practice, etc.), as well as its continuity [11], lead to the need to apply not only academic methods of training (lectures, seminars,

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laboratory classes) but also innovative methods - for example, imprinting [12], role games, as well as the implementation of a competences approach [13]. The experience of the International Pharmaceutical Federation in Africa in developing a needs-based education strategy, advocacy, and the creation of an enabling practical environment for academic capacity-building is interesting [14]. In Japan, the period of training of pharmaceutical specialists has been extended to 6 years in order to focus on clinical disciplines [15]. In Brazil, distance learning courses were used to improve training. The results of the training were positive and comparable to the face-to-face form [16]. Medical universities in the United States use the «flipped» classroom model [17]. The problems of pharmacy education are actively studied by scientists around the world [18-22]. Programs of bachelor 's degree [23], problem-oriented training [24], "pumping" (poll, training, mentoring) [25], improvement of the identity of training programs in the field of health care [26], use of five approaches to solving problems of pharmacy: clinical, ethical, managerial, economical, and legal [27], as well as other experimental methods [28], are offered.

In the training process on the specialty "Pharmacy" based on the Far-Eastern State Medical University (FESMU) in order to improve the quality of learning of specialists for practical activities, the discipline "Pharmaceutical consultation" was introduced using interactive methods of study for students of the graduation course in 2017. Scope of discipline: 32 classroom hours for face-to-face training, and 4 hours for a correspondence course. The thematic plan of classes was drawn up on the basis of a questionnaire of visitors to pharmacy organizations (n = 400), thus the training was also practical-oriented. The development of the material took place during the staging of the patient's application to the pharmaceutical organization, and the activity of the specialist based on the indicated symptoms/problems/claims of the visitor. Thus, the algorithm of the worker's action in the situations most common in practice was drawn up. For 3 years, the course was adapted based on the conditions of the modern pharmaceutical market. Demonstration of practical skill and competence formed as a result of discipline development was carried out at primary accreditation of specialists on the basis of FESMU. The evaluation was exhibited by experts - practical workers.

The aim of the study:

was to assess the effectiveness of training students in the specialty "Pharmacy" to advise in pharmacy organizations on the basis of protocols of primary accreditation before and after the introduction of the discipline "Pharmaceutical consultation" using interactive forms of training.

Methods:

A comparative analysis of the results of the second stage of primary accreditation of graduates of the FESMU was done with a specialty "Pharmacy," station "Pharmaceutical consultation. The general population amounted to 2016 full-time training - 29 protocols; 2019 full-time training - 29 protocols; and 2019 correspondence course - 43 protocols. The sample was 100% of the general population (n = 101). Response coding was used (1 - satisfactory response of the accredited parameter, 0-unsatisfactory response). The results of the accreditation were entered in the Microsoft Office Excel 2015 spreadsheet. The data was processed using the "Subtotals function" and using the "Data Analysis" package - descriptive statistics. Statistical processing was performed using the IBM SPSS Statistics 25 software package. The Kruskal-Wallis criterion was used to compare three independent variables (responses accredited in different forms of education and periods of learning). The distribution equality hypothesis was rejected at the significance of $p<0.05$. The Mann-Whitney criterion was used to compare two independent variables (accredited responses: full-time training 2016-full-time training 2019; full-time training 2016-correspondence course 2019; full-time training 2019-correspondence courses 2019). The differences were considered statistically significant at asymptotic significance (bilateral) $p<0.05$. The Spirman rank correlation coefficient was used to assess the relationship between satisfactory responses accredited to the form and the training period. The correlation was considered statistically significant at the significance of bilateral $p<0.05$.

Results:

Based on the data of the analysis of the protocols of primary accreditation in the specialty "Pharmacy" at the station "Pharmaceutical consultation," it can be concluded that the share of satisfactory responses of accredited has increased by 21 estimated parameters out of 24 (87.5%). At the same time, there was a deterioration of skill demonstration according to the parameter: "Determination of patient problem and skill to ask clarification questions" by 3.4% at full-time department 2019 and by 16.4% at correspondence course 2019; "Mention of the need to consult a doctor" by 2% for full-time training 2019 and by 16.9% correspondence course 2019; "Use of instruction on the medical application of drugs" by 22.6% in full-time training 2019 and by 15.3% in correspondence course 2019.

The most indicative indicators of improving the preparation of students for pharmaceutical consultation in pharmacy organizations are the parameters "Explanation of pharmacological action," "Offering over-the-counter drugs", "Justification of proposed drugs." The results of primary accreditation of specialists are given in Figure 1. The statistical processing is shown in Table 1. There has been an increase in satisfactory responses accredited by 13.8%-29.3% in full-time training in 2019 and by 9.1% - 20.7% in a correspondence course in 2019.

The correspondence students more often have difficulties with the parameter "Control of interaction of drugs". There was a decrease of 17.1% in 2019. In addition, accredited specialists who graduated from the correspondence department in 2019 were 26.8% less likely to offer the visitor to pay for the chosen drug. The results of primary accreditation of specialists are given in Figure 2. The statistical processing is shown in Table 2.

The dynamics of satisfactory responses of accredited on the parameters "Mention of the need to consult a doctor", "Patient-oriented consultation, attention to the patient" (Figure 3, Table 3) proves the expediency of unification algorithms of consultations in drugstores. However, in the summary assessment of accredited, experts, nevertheless, estimated the increase of professionalism of service provision by 8.6% in full-time training in 2019 and by 1.6% in a correspondence course in 2019.

Another indicator of the growth of qualifications of future pharmaceutical workers is the reduction of the average time to consultation for the visitor/patient by 57 seconds in full-time training 2019 and by 16 seconds in correspondence course 2019 (Figure 4, Table 4).

Discussion:

Deterioration of skill demonstration according to the parameter "Determination of patient problem and skill to ask clarification questions" may be due to the inclusion of patient legend in the passport of the station with clarification of symptoms and reason of application to the pharmacy organization. The reduction in the frequency of performance of the "Mention of the need to consult a doctor" proves the need to standardize the pharmaceutical consultation algorithm taking into account the commitment of patients to drug therapy. The decrease in the frequency of usage of instruction on the medical application of drugs may be explained by the increase in the confidence of those accredited in their qualifications, knowledge, and practice, which obtained in the discipline "Pharmaceutical consultation" using interactive training.

There is an improvement in the quality of providing information about the drugs, explanation of its action, offering alternatives, and its justification, which proves the effectiveness of learning the material by students, in the form of staging and further discussion of situations with an associate professor.

It is more difficult for correspondence course students to justify the alternative offered to the patient to control the interaction of drugs. In addition, they less often mention the need to visit a doctor and are less attentive to patients' problems. This can be explained by the shortage of classroom hours for direct work with the teacher at the simulation center in order to develop a practical skill (4 hours). The offer to pay for the drug was also was executed less frequently by students of the correspondence department, which can be explained by the presence of basic education in them, and accordingly by the orientation, first of all, on the information component of the process. Thus, hours determined by the curriculum during a correspondence course, are not sufficient to form a skill of communication with the patient/visitor of the drugstore. The situation can also be corrected by standardization of the provision of the service and creating a typical algorithm.

Reducing the time of pharmaceutical consultation can improve the quality of the service provided in the pharmaceutical organization, reduce the visitors' waiting time in the queue, increase the possibility and trade turnover of the drugstore, as well as increase attendance due to the improvement of drug care.

Conclusion:

Based on comparative analysis, it can be concluded that the quality of training of pharmaceutical specialists for consultation in pharmacy organizations using interactive forms of training (staging, role-playing) is improved. There was an increase in professionalism of the service and a reduction in its time, improvement of the information component of the process (explanation of the mechanism of action, the offer of drugs and its justification), reduction of the frequency of reference to the instruction on the medical application of drugs. At the same time, organizational difficulties are observed due to the absence of a typical algorithm, which leads to a decrease in the number of mentions of the need to consult a doctor. The obtained data are the basis for further optimization of the studied discipline and improvement of the quality of drug care.

Ethics:

This article does not contain research involving humans or animals.

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Author's contribution:

All authors contributed equally to the research work.

Conflict of interests:

The authors claim that there is no conflict of interest.

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Table 1. Statistical processing of 2016 and 2019 accreditation data (Part 1)

The estimated parameter	Training period and form	Statistical criterion	*p* value
Explanation of pharmacological action	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.010
	full-time training 2016 – full-time training 2019	Mann-Whitney	0.010
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.043
	full-time training 2016 - full-time training 2019- correspondence course 2019	Spirman	0.040
Offering over-the-counter drugs	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.001
	full-time training 2016 – full-time training 2019	Mann-Whitney	0.001
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.001
	full-time training 2016 - full-time training 2019 - correspondence course 2019	Spirman	0.001
Justification of proposed drugs	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.001
	full-time training 2016 – full-time training 2019	Mann-Whitney	0.001
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.046
	full-time training 2019 - correspondence course 2019	Mann-Whitney	0.014

Table 2. Statistical processing of 2016 and 2019 accreditation data (Part 2)

The estimated parameter	Training period and form	Statistical criterion	*p* value
Control of interaction of drugs	full-time training 2019 - correspondence course 2019	Mann-Whitney	0.031
The offer to pay drugs	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.001
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.005
	full-time training 2019 - correspondence course 2019	Mann-Whitney	0.001
	full-time training 2016 - full-time training 2019 - correspondence course 2019	Spirman	0.001
Refusal to sale prescription drug without prescription	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.022
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.032
	full-time training 2016 - full-time training 2019 - correspondence course 2019	Spirman	0.020

Table 3. Statistical processing of 2016 and 2019 accreditation data (Part 3)

The estimated parameter	Training period and form	Statistical criterion	*p* value
Mention of the need to consult a doctor	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.038
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.049
	full-time training 2016 - full-time training 2019 - correspondence course 2019	Spirman	0.017
Patient-oriented consultations. attention to patient	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.002
	full-time training 2016 – correspondence course 2019	Mann-Whitney	0.008
	full-time training 2019 - correspondence course 2019	Mann-Whitney	0.004

	full-time training 2016 - full-time training 2019 - correspondence course 2019	Spirman	0.002
Professionalism	full-time training 2016 – full-time training 2019	Mann-Whitney	0.040

Table 4. Statistical processing of 2016 and 2019 accreditation data (Part 4)

The estimated parameter	**Training period and form**	**Statistical criterion**	***p* value**
Time for pharmaceutical consultation	full-time training 2016 - full-time training 2019 - correspondence course 2019	Kruskal-Wallis	0.015
	full-time training 2016 – full-time training 2019	Mann-Whitney	0.005
	full-time training 2019 - correspondence course 2019	Mann-Whitney	0.035

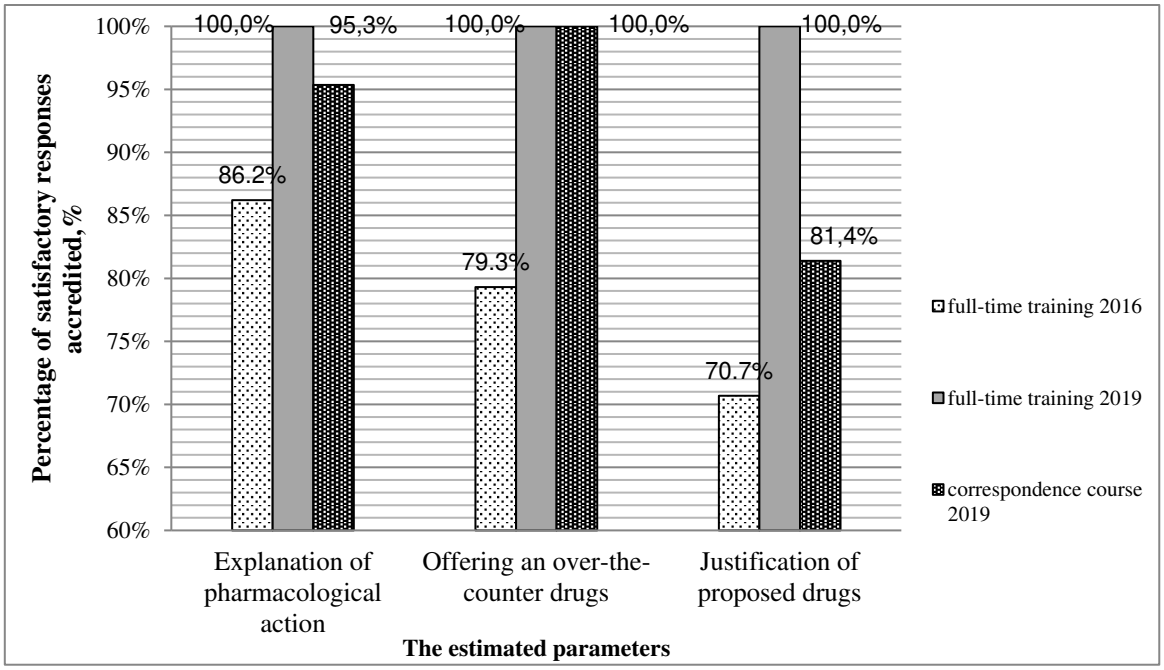
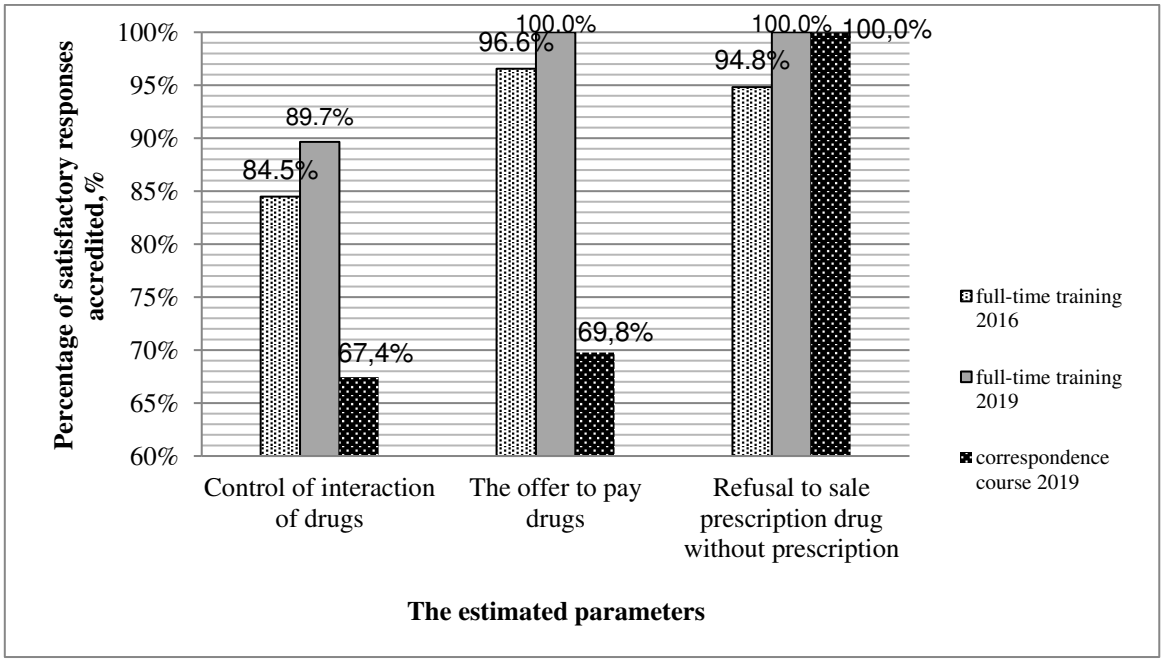


Figure 1. Trends in satisfactory response rates of accredited specialists (Part 1)



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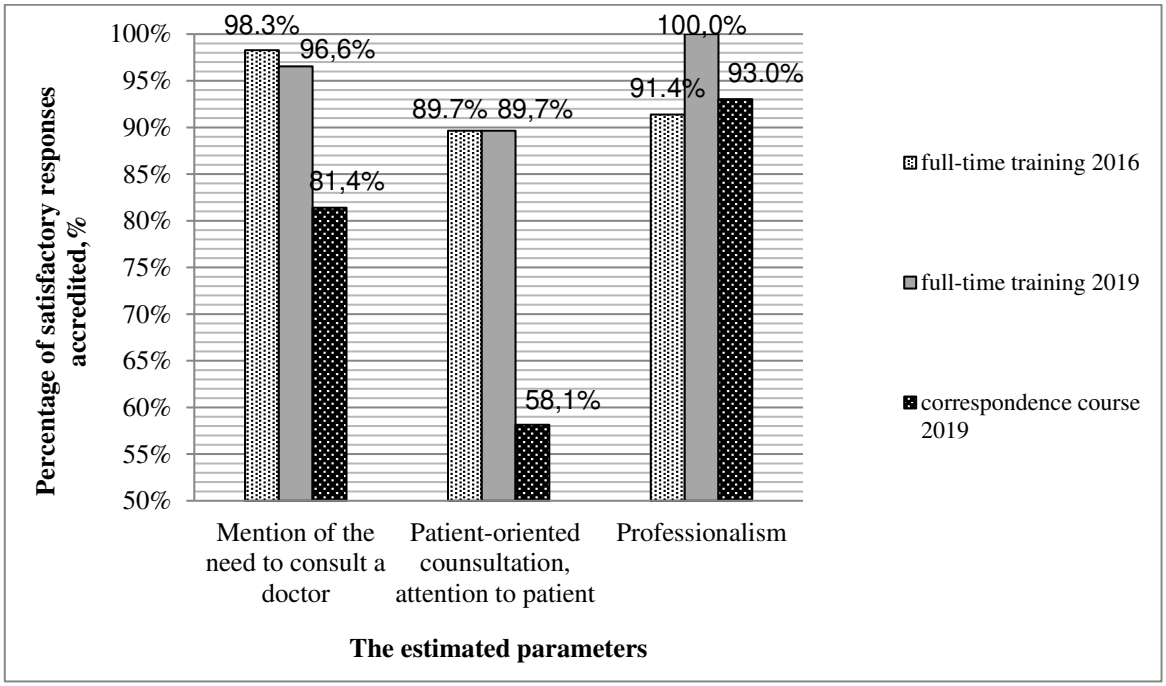

Figure 3. Trends in satisfactory response rates of accredited specialists (Part 3)

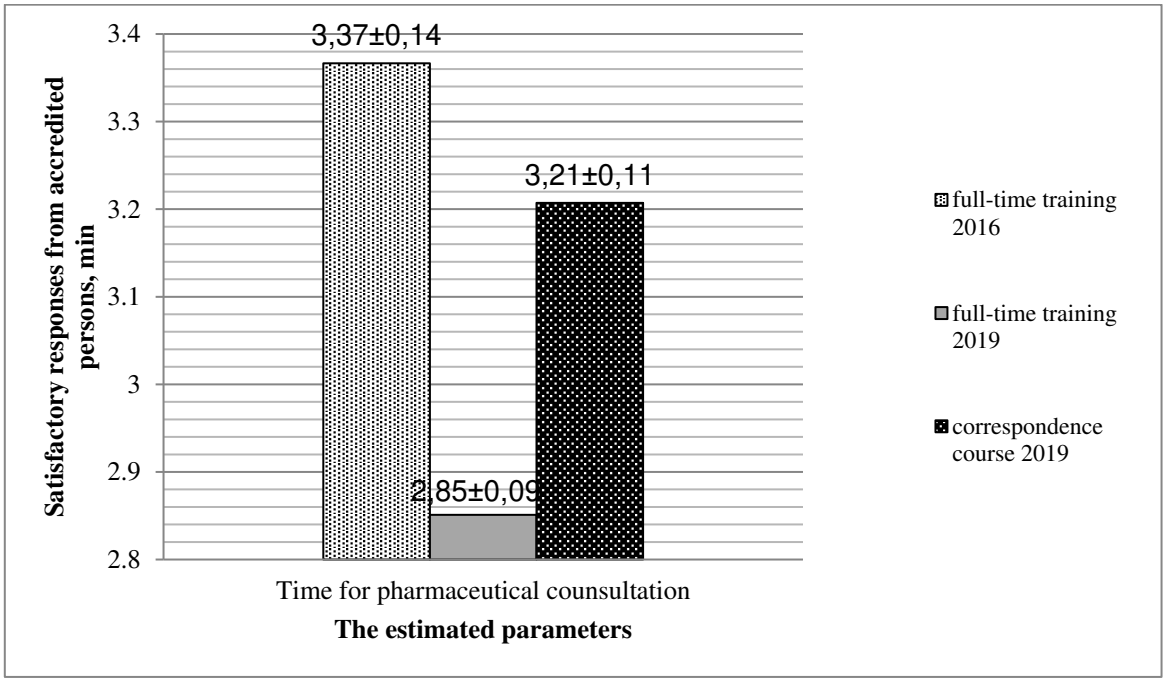

Figure 4. Trends in satisfactory response rates of accredited specialists (Part 4)