Efficiency of teaching chemical disciplines to pharmaceutical students based on the synergetic approach

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Introduction: The relevance of improving the quality of basic chemical knowledge among students of pharmaceutical specialities is because, in the conditions of modernisation of pharmaceutical education in Ukraine, it is necessary to provide an innovative approach to teaching, taking into account the trends in a modern synergetic paradigm in pedagogy; the priority is to create optimal conditions for personal development.

Materials and methods: The experiment involved 989 second to third year students of the pharmaceutical faculty of the Bogomolets National Medical University in the academic years of 2017/2018 and 2018/2019. Students in the control group received traditional training in Biochemistry, while the study group followed the innovative teaching system. During the fourth and fifth terms, knowledge checks and various types of written works were systematically performed. Students' satisfaction with classes and teaching technologies was assessed using the CSI (customer satisfaction index) method. At the end of the course and after testing and questioning students, analyses of the level of biochemical knowledge formation were carried out, i.e. the coefficient of course content mastering was calculated. The efficiency coefficient for innovative technologies was computed by summing the mastering coefficient and the student satisfaction index. The following study methods were used: testing, questioning, and methods of mathematical statistics.

Results: The analysis of the results showed the following: 1) The level of knowledge formation was 0.855 ± 0.025 in the study group and 0.65 ± 0.01 in the control group. The mastering coefficient was higher in the study group than the control group, by an average of 0.2 at the end of the fourth term and 0.22 at the end of the fifth term. 2) The satisfaction index was higher in the study group compared to the control group by an average of 0.191. 3) The efficiency coefficient for innovative teaching technologies was higher than the efficiency coefficient for traditional technologies by an average of 0.197.

Conclusions: Implementing a synergistic approach, i.e. updating the contents, methods, and forms of training, taking into account factors such as openness, self-organisation, self-development, nonlinear thinking, management, and self-management, improves the quality of teaching chemical subjects to students in pharmacy training.

Development of pharmaceutical care practical skills during pharmacy internship

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Introduction: Pharmaceutical care (PC) is the identification, resolution, and prevention of potential drug-related problems. It is essential to develop PC practical skills to secure quality provision of care. In the pharmacy curriculum at the University of Tartu, the content of the six-month pharmacy internship was redesigned in 2017 to provide a practice more focused on PC. This study aimed to evaluate the implementation of the redesigned pharmacy internship by outcomes associated with pharmacy students' experience in the provision of PC.

Materials and methods: The study sample consisted of fifth-year pharmacy students who completed the pharmacy internship in 2018 and 2019 (n=45). An international 20-item survey instrument (1) was adapted. Students' perceptions of PC skills (ten items), functions (five items), and outcomes (five items) were collected before and after the pharmacy internship, using a five-point Likert scale (1=strongly disagree to 5=strongly agree). For data analysis, the Mann-Whitney test was used.

Results: Statistical comparison of pre-internship and post-internship evaluation results demonstrated that perception of most of the survey items was significantly improved after the pharmacy internship. The mean score of perception about PC skills was 3.44 ± 0.34 in the pre-test and 4.38 ± 0.29; $p \leq 0.01$ in the post-test. Among PC functions, identification, understanding, and solving drug-related problems improved (all $p = 0.01$). Students perceived their increased role in improving patient quality of life and reducing treatment costs ($p = 0.01$ for both).

Conclusions: According to their perception during the pharmacy internship, students' PC practical skills have significantly improved. Results demonstrate that the updated pharmacy internship course has been successfully implemented.