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RESEARCH COMPETENCY AT THE UNDERGRADUATE LEVEL OF HIGHER EDUCATION

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Державний заклад «Дніпропетровська медична академія Міністерства охорони здоров'я України», Дніпро

ДОСЛІДНИЦЬКА КОМПЕТЕНТНІСТЬ НА ДОДИПЛОМНОМУ РІВНІ НАВЧАННЯ

Abstract. The aim of the article is to provide a justification for the introduction of "research competency" concept and to describe the ways of its formation among students of higher medical institution, based on the experience of the Students' Scientific Society (SSS) work at the Department of Internal Medicine 3 of State Institution "Dnipropetrovsk Medical Academy of the Ministry of Health of Ukraine". The need to implement the research competency in the medical students training is substantiated in this article on the base of current legislation of Ukraine and today's requirements. A SSS work at a clinical department is analysed as one of the possible ways of the research competency acquisition, with the aspects that contributes to the development of the desired skills as well as those that may impede its mastery. Research work is a powerful impetus to the motivation to learn, as it directs students to scientific research. During working at SSS, students learn how to make a literary search, critically assimilate and assess of primary research literature and formulate a scientific problem, which require solution. At next step, they choose and apply the appropriate research methods that could be used in solving this problem. And finally, participants comprehend the statistics and process the obtained data followed by their scientific papers presentation in literary scientific sources or conferences. The work at SSS helps graduates be more competitive in today's job market as it brings up and cultivates professionally required qualities, including teamwork, ability to manage time and workload properly, an understanding of medical ethics and a range of communication skills. Currently, working in a SSS remains one of the best available options for introduction of the research competency in the training of the medical students, but it does not provide complete involvement of all undergraduate students, as required by the law of Ukraine.

Key words: research competency; Students' Scientific Society; higher medical education; research skills.

Анотація. Метою роботи є обґрунтування виділення окремого поняття «дослідницька компетентність» та висвітлення шляхів формування дослідницької компетентності у студентів закладу вищої медичної освіти на прикладі роботи студентського наукового товариства на базі кафедри внутрішньої медицини 3 Державного закладу «Дніпропетровська медична академія Міністерства охорони здоров'я України». У статті на основі існуючого законодавства України та вимог сьогодення обґрунтовано необхідність імплементації дослідницької компетентності у навчання студентів закладу вищої медичної освіти. З позицій власного досвіду та даних літератури наведено бажані цілі навчання з урахуванням можливості засвоєння «дослідницької компетенції». Проаналізовано роботу студентського наукового товариства (СНТ) клінічної кафедри, як один із можливих шляхів набуття дослідницької компетентності. Наведено аспекти роботи студентів у СНТ, які сприяють набуттю бажаної компетентності, а також ті, які можуть перешкоджати оволодінню нею. Дослідницька робота – це потужний поштовх до мотивації навчатися, оскільки спрямовує студентів на науковий пошук. Під час відвідування СНТ студенти розвивають навички літературного пошуку, критичного засвоєння інформації та оцінки існуючої первинної дослідницької літератури; формулювання наукової проблеми, що потребує вирішення; розробки та використання відповідних методів дослідження, що допоможе у вирішенні цієї проблеми; розуміння статистики та обробки даних із наступним представленням їх до літературних наукових джерел. Робота в СНТ виховує та формує професіонально необхідні якості, включаючи командну роботу, можливості управління часом та навантаженнями, розуміння медичної етики та ряд комунікативних навичок, що сприяє випускникам бути більш конкурентоспроможними

на сучасному ринку праці. На сьогодні робота в СНТ залишається одним із оптимальних існуючих варіантів впровадження дослідницької компетентності у процес навчання магістрів медичного профілю, але він не забезпечує повне охоплення усіх здобувачів вищої освіти, як того вимагає закон України.

Ключові слова: дослідницька компетентність; студентське наукове товариство; вища медична освіта; дослідницькі навички.

Introduction. The educational program of the second level (undergraduate of medicine) in the field of knowledge 22 "Health care", speciality 222 – "Medicine" indicates groups of competencies a student must acquire, namely integrated, general and professional. At the same time, by the Law of Ukraine "On Higher Education" (with amendments and additions) from 01.07.2014 No. 1556-VII, the undergraduate educational program necessarily must include research component, but it still has not been sufficiently implemented in educational programs.

In addition, modern higher medical education implies continuous professional skills and competencies improvement at both undergraduate level and after the graduation, as the current requirements for specialists and innovative development of the health care system demands for a continuous acquisition of qualified professional knowledge and competencies to form critical attitude to existing information. This is extremely important in the context of an almost geometric progression of the information volume related to various fields of medicine, an increase in direct and indirect expenses on advertising of medicines, methods of examination and treatment.

One of the possible solutions to address the challenges above is to introduce a concept of "research competency" in the second level educational program with the establishing of the particular place and ways of its acquisition by students in higher medical institution.

Although this competency was defined (pedagogical and psychological) for higher education in theory, the examples for practical implementation into the educational process and specification in accordance with the description of the National Qualifications Framework in the form of the competency matrix were not given.

Currently, the need to obtain research competency is set for the third (educational scientific) level of higher education in the speciality "Medicine". In our opinion, this does not fully meet the general requirements and need to be revised. The research competency as the basis for research skills should be acquired at the second (undergraduate) level of higher medical education.

The aim – to provide a justification for the introduction of "research competency" concept and to describe the ways of its formation among students of higher medical institution, based on the experience of the Students' Scientific Society (SSS) work at the Department of Internal Medicine 3 of State Institution "Dnipropetrovsk Medical Academy of the Ministry of Health of Ukraine".

Theoretical framework. The importance of evidence-based medicine for medical practice recently cannot be underestimated. However, not all medical journals and scientists adhere to its principles when publishing articles and during speeches, sometimes trying to manipulate existing facts. Given that medicine is a profession which is based on scientific evidence, active students engaging in researches are an effective method to enhance the skills of future doctors' navigation in existing and daily emerging recommendations for diagnosis, treatment and further management of patients. Medical students should be aware that research skills and competencies are extremely important for routine clinical practice, and not just useful for scientists involved in research. Research contributes to the formation of students' critical thinking and their focus on problem solving, which are mandatory competencies for new achievements in patient treatment and, therefore, for clinical practice improvement [5].

In addition, there is an opinion that the sooner the basis for research practice is laid, the stronger the principles understanding of the evidence-based medicine will be [4], which will contribute to the further implementation of its achievements in the future of doctor's daily works.

According to the Law of Ukraine "On Higher Education", competency is a dynamic combination of knowledge, abilities and practical skills, ways of thinking, professional, ideological and civil qualities, moral and ethical values, which determines a person's ability to successfully carry out professional and further educational activities and is the result of training in a certain level of higher education.

Even though the law states that the undergraduate educational program must include at least 30 percent of the research component, its implementation still faces the difficulties and is not completely fulfilled.

In Ukraine, the need for the concept of research competency is widely discussed in the context of school education. In the medical education framework, attempts to determine the place and role of this

competency were carried out for the medical assistants [2], for the medical students during the natural sciences study [1].

Today, the following hierarchy of competencies by A. V. Khutorsky is widely recognized: integral (core, key), general (basic, subject), professional (subject, special), with the components of research competency are partially included in all three levels. The allocation of research competency as a separate concept will contribute to its clearer understanding, planning of the expected learning objectives, as well as finding of possible methods for the research (scientific) component integrating in the educational programs of higher medical institutions, as required by the Law of Ukraine "On Higher Education".

Research is defined as "critical and exhaustive investigation or experimentation, having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions, theories, or laws in the light of newly discovered facts, or the practical application of such new or revised conclusions, theories, or laws" [6]. Therefore, research competency can be defined as competency in research conducting.

The essence of a competency approach is that the results, which the student must achieve in the learning process, are known in advance. Therefore, for introducing the separate concept of "research competency", it is appropriate to select its components, which are target results. In our opinion, they are the best covered in the article that summarizes 10 years' practical experience in integrating the research component in the educational program at the undergraduate level of education at the University of Edinburgh [3]. However, given the different possibilities of higher education, we propose the desired learning objectives with some changes: 1) to formulate simple, relevant research questions for literature reviews with subsequent designing of appropriate studies or experiments to address it; 2) to identify and explore reliable information sources, including international bibliographic databases; 3) to use the reliable medical evidence, which are determined by a systematic search and evaluation of the relevant information sources to substantiate own clinical decisions; 4) to conduct simple medically relevant research to collect and analyse data; 5) critically evaluate diagnostic, prognostic and treatment trials and other information sources, including qualitative and quantitative research; 6) to apply the findings from clinical research and literature review to answer questions related to specific clinical problems regarding patients management, health promotion, providing counselling and information to patients; 7) apply the findings from clinical research and literature review for both further own research and education; 8) to adhere to legislation on confidentiality and patient's data protection always when deals with information, including research; 9) to abide by the principles of biomedical ethics in clinical trials planning and conducting, as well as the principles of patient's and society's interests support; 10) to develop new knowledge and personal understanding through the application of basic research methods and acquired skills.

An equally important issue is to determine the principles of research competency teaching. According to the second level educational program (Master of Medicine) in the field of knowledge 22 "Healthcare", speciality 222 – "Medicine" the following teaching methods could be used: lectures, seminars, small group practical classes, a practice and consultations with the teacher. However, the most productive way of research competency mastering is to conduct one's own research [1–3, 6].

Given the traditions of the activities of higher medical institutions and current requirements, the most appropriate way for the research competency formation is the SSS. As part of the SSS students conduct both theoretical and practical research under the guidance of experienced teachers, thus acquiring the necessary research skills, which ultimately gives the formed research competency.

The research competency formation in the framework of the SSS work has a number of positive aspects. First of all, the students independently determine the direction of their activity and the project for further work, which usually contributes to the future speciality choice, so the students are highly motivated, inspired and try to impress their supervisor who could become a potential mentor or a future colleague. Secondly, SSS creates an environment of learning from the research process, in which students can make a mistake, but this is not a negative result - students demonstrate that they learn from their mistakes, solve the problems arising during the work, critically appraisal their activities and draw the conclusions for the future [3]. Thirdly, the aim of the head of SSS during the students' scientific work is to provide continuous feedback by correcting students' actions and giving constructive criticism. Another important point to mention is that the student begins to realise that teamwork is much more important than individual efforts to achieve common goals. This prepares him for further work in a clinical team

together with the scientific tutor, a hospital department head and consultants.

It should be added that work in a SSS and in a scientific paper writing boost the development of the student's creative abilities, because the atmosphere of intellectual search and scientific communication stimulates students' creative growth, a desire to find the truth and to succeed. This is probably the most important thing in the learning process, as a success induces the desire to know more and learn, confidently go forward and improve.

Despite the all afore said positive aspects, the research competency formation at SSS is not an ideal option, because, first and foremost, according to the Law of Ukraine "On Higher Education" the research component must be present in the training of all students who acquire a graduation level, but far not all of them attend SSS. Secondly, the conflict of time and energy could arise between work at SSS and other parallel training activities (academic disciplines). This usually causes two consequences: the student will learn how to structure his time by prioritization, or he will choose only one activity – either attending SSS with consequent point losses on core subjects, or to study subjects and not attend SSS. In addition, this raises another problem: students who strive to achieve a high score rarely visit SSS, focusing just on learning process, and thus do not master a research competency. And finally, the relatively short period of the student's research work can lead to the fact that the student completed his study at a higher medical institution without receiving the final results of his research.

Conclusions and Prospects for Research. 1. Based on the Law of Ukraine "On Higher Education", the introduction of the research competency concept in the second level educational program (undergraduate of medicine) in the field of knowledge 22 "Healthcare", speciality 222 – "Medicine" is a today's requirement, as it will contribute to the implementation of the research component in the learning process.

2. Today, the widest students' introduction to research activities takes place within the framework of SSS, which has a number of both positive and negative aspects.

3. During work at SSS, students learn how to make a literary search, critically assimilate and assess of primary research literature and formulate a scientific problem, which require solution. At next step, they choose and apply the appropriate research methods that could be used in solving this problem. And finally, participants comprehend the statistics and process the obtained data followed by their scientific papers presentation in literary scientific sources or conferences.

4. The work at SSS helps graduates be more competitive in today's job market as it brings up and cultivates professionally required qualities, including teamwork, ability to manage time and workload properly, an understanding of medical ethics and a range of communication skills.

5. By engaging students in scientific, research and experimental work, we enhance their natural abilities and inclinations, and create the atmosphere for their creative self-improvement.

Currently, work in SSS remains one of the best available options to introduce research component in the training of medical students, but it does not provide full coverage for all undergraduate students, as required by the Law of Ukraine "On Higher Education". Therefore, developing of a modern model of research competency implementation, which would cover the maximum number of students, must be the ultimate goal.

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