

UDC 378.091.322:001.891:378.093.5:611.018:378.6:61(477.84-25)
DOI: 10.24061/1727-0847.23.4.2024.75

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THE WORK OF THE STUDENT SCIENTIFIC CLUB AT THE DEPARTMENT OF HISTOLOGY, CYTOLOGY AND EMBRYOLOGY OF THE IVAN HORBACHEVSKYI TERNOPIL NATIONAL MEDICAL UNIVERSITY OF THE MINISTRY OF HEALTH OF UKRAINE

РОБОТА СТУДЕНТСЬКОГО НАУКОВОГО ГУРТКА НА КАФЕДРІ ГІСТОЛОГІЇ, ЦИТОЛОГІЇ ТА ЕМБРІОЛОГІЇ ТЕРНОПІЛЬСЬКОГО НАЦІОНАЛЬНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ ІМ. І.Я. ГОРБАЧЕВСЬКОГО МОЗ УКРАЇНИ

Резюме. Науково-дослідницька діяльність студентів є важливим засобом організації їхньої навчальної роботи для глибокого вивчення різних аспектів гістології, цитології та ембріології. Важливим етапом у формуванні майбутнього спеціаліста є самостійна робота студента під час якої викладачі виявляють найбільш ініціативних і зацікавлених студентів, які продовжують свої дослідження в рамках діяльності студентського наукового гуртка кафедри. Студентський науковий гурток, який створений на кафедрі гістології та ембріології Тернопільського національного медичного університету імені І. Я. Горбачевського МОЗ України сприяє підвищенню наукової підготовки здобувачів вищої освіти, їх організованості, формуванню наукової самостійності, відповідального ставлення до навчання, розвитку комунікаційних навичок між однолітками та командного духу. Основною метою діяльності наукового гуртка є підготовка всебічно розвинених та висококваліфікованих лікарів. Учасники гуртка активно беруть участь у моделюванні експериментів, виготовленні гістологічних мікропрепаратів, проводять морфометричні дослідження, за допомогою світлооптичного мікроскопа аналізують морфологічну будову, а також представляють результати своєї роботи у наукових тезах та статтях. За час існування студентського наукового гуртка на кафедрі гістології та ембріології його учасники щороку здобувають призові місця на внутрішньоуніверситетських, міжуніверситетських і міжнародних наукових конференціях та конгресах.

Ключові слова: науковий гурток, гістологія та ембріологія, експеримент, мікропрепарати, науково-дослідна робота.

Today's society is characterized by rapid changes based on the active implementation of advanced technologies in all aspects of human life, which ensures the continuous development of its activities [1]. This intensive development of humanity is reflected in the main tasks of higher education in Ukraine, in particular, ensuring the

highest development of students' potential that would meet international standards and is manifested in the increasing need for new forms of education, training and practical skills [2, 3].

In medical practice, the ability to acquire new knowledge and implement it in work contributes to the progress of a doctor in his/her professional activity

and increase of his/her competence. In order for a personality to be comprehensively developed, the task of introducing innovations into the educational process is faced by the academic staff of higher education institutions. In modern conditions, an important component of university education is the research activity of higher education students, which forms a scientific outlook and creative thinking, and also contributes to professional development. Higher education students are involved in this activity through the student research club. It serves as the basis for the professional training of higher education students, contributing to the formation of an intellectual approach to scientific and independent work, the development of creative abilities, skills and competences based on their own beliefs. The scientific activity of the club members within the club allows them to master the skills of systematizing thoughts, consistent presentation, analysis and generalization of research results, as well as to become more familiar with the theoretical and practical aspects of academic disciplines [3, 4]. A student research club is defined as an association of purposeful higher education students that makes a creative and developmental scientific environment by initiating and implementing successful projects aimed at supporting modern scientific ideas, innovations, and mutual knowledge exchange.

The educational environment requires students to be self-motivated, have clearly defined priorities, be socially active, and be able to express their own opinions. Modern specialists need to be trained so that they can confidently compete not only at the national but also at the international level, quickly and creatively solve non-standard tasks in the field of science and study with the most effective result [5]. High-quality professional training, which begins during the student years, should promote the development of clinical thinking, which includes multifaceted analysis, clear differentiation of knowledge, its mobility and adaptability, which will ensure the effectiveness of the professional activity of a modern physician [6]. Active participation of students in research work is an effective means of improving the quality of training and developing their social and psychological competence to work in professional teams [7-11].

The purpose of the article is to assess the significance of the activities of the student scientific club of the Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine at the Department of Histology and Embryology for the training of highly qualified future medical specialists.

Research results and their discussion. The research work of higher education students is

an important means of improving the quality of training in higher education. Student research clubs in educational institutions are created to improve the learning of the discipline and develop skills of independent and research work. The existence of the club is the result of fruitful cooperation between teachers and students, based on establishing pedagogical and psychological contact, taking into account the individual characteristics of students. This helps to reveal their talents and abilities. The presence of a student scientific society in a higher education institution helps to improve the level of scientific training of students. It creates interest and need for scientific creativity among higher education students, develops critical thinking, scientific independence, and a conscious attitude to learning. That is why the Department of Histology and Embryology of the Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine has been successfully operating a student scientific club for many years, which promotes the comprehensive development of knowledge, skills and professional self-realization of students in their future careers. The activities of the club are based on the principles of scientificity, self-development, democracy, humanism, personal and collective responsibility, collegiality and openness in discussing issues. The main factors influencing the educational process are independent, practical and scientific activities. As a result of the club's work, students master the skills of creating multimedia presentations, preparing reports to present research results, taking the first steps in writing abstracts and articles, gaining experience in public speaking and independence while participating in scientific forums, seminars and conferences. The main tasks of the student research group are to actively implement research work of higher education students as an integral element of lectures and practical classes, independent work of students; attract students who are interested in research; and coordinate students' research activities. Involvement of students directly in research is a key and very responsible part of the scientific club's activities.

The work of the scientific club begins in the first year of study, where students have the opportunity to study the discipline in depth. However, the main purpose of the scientific club is to develop the creative potential of higher education students and engage them in research. Participation in it provides an opportunity for higher education students to receive consultations and advice from teachers, present the results of their research at scientific conferences, get acquainted with the latest research and discoveries in the field of morphology, in particular histology, cytology

and embryology, i. e. all conditions are created that motivate higher education students to independent creativity, professional development, interest in self-improvement and the implementation of their skills in practical and scientific activities.

The main activity of the student scientific club is to conduct research by higher education students in extracurricular time in the areas studied at the department. An important component of this process is the common scientific interests of teachers and students. The existence of the club is the result of fruitful cooperation between teachers and students, which is achieved through the establishment of psychological contact based on individual characteristics, which helps to reveal students' talents and abilities.

The work plan of the club and the topics of research of higher education students are discussed and approved at a meeting of the department. Research topics for study are also proposed, discussed and approved, taking into account students' suggestions. The choice of a research topic for a higher education student, and subsequently for a future specialist, is a critical component, as it is often this topic that determines the future of a young scientist for many years to come.

Any student of Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine who successfully completes the curriculum and has a desire to participate in the research work of the Department of Histology and Embryology on a particular topic can become a member of the student scientific club. The department has about 20 students in a scientific club. Each student is assigned an experienced teacher who individually supervises and coordinates their research. The head of the student scientific group of the Department of Histology and Cytology of the Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine is Assistant Professor, Doctor of Philosophy in Biology – Violetta Kulbitska. Higher education applicants participate in meetings every two weeks in accordance with the plan of the student scientific group, at the training base of the department or in the laboratories of histological and immunohistochemical research, electron microscopy laboratory of the sector of morphological research of the interdepartmental educational and scientific laboratory. Under the guidance of the coordinator, the latest research and discoveries in the field of histology, cytology and embryology are discussed. Every year, the composition of higher education students participating in the work of the scientific club of the Department of Histology and Embryology is renewed. This ensures the continuity of scientific

research development, allows new students to join interesting scientific research and gain experience in scientific work. The renewal of the club team allows to maintain the dynamics of the group's activities, promotes the transfer of knowledge and experience between students of different courses and forms an active scientific environment at the department.

The club members are actively involved in modeling experiments. The young scientists take material for the further manufacture of paraffin blocks. Next, they make sections and stain the microsections, which are examined using the MICROmed SEO SCAN light microscope, thus studying the histological features of the organ at the tissue and cellular levels. With the help of special statistical programs, higher education students have the opportunity to conduct morphometric studies of microsections. After a detailed analysis of the morphological structure and morphometric data, conclusions are drawn about the experiment. The key role in the whole process belongs to the supervisor. He or she should closely monitor each student, anticipate possible problems that may arise in the course of work and prevent them. Experienced teachers also focus on developing students' intrinsic motivation. Subsequently, students demonstrate the results of their research by participating in conferences, symposia, forums, writing scientific abstracts and articles. Students' participation in such publications is an important stage in their training as young scientists, as it allows them not only to present their own scientific achievements but also to gain practical experience in writing and editing scientific texts, mastering academic writing standards, as well as participating in scientific discussions and receiving feedback from experienced colleagues. Such publications often become the basis for further research, and also contribute to the scientific rating of the Department of Histology and Embryology and the university as a whole.

Young researchers have the opportunity to present their work to a wide scientific audience and realize themselves as individuals. Criteria for evaluating scientific reports may include:

- scientific novelty;
- thoroughness of the topic study;
- quality of presentation of the material;
- design of the work;
- ability to quickly navigate and answer additional questions.

The thoroughness of the work performed is understood as an assessment of the report in terms of the relevance of the research topic, its practical significance, the presence of elements of scientific novelty, and the scope of research performed by the

author independently. The quality of the presentation of the material is assessed based on how freely the speaker uses scientific terms and presents the material competently. The evaluation of the paper's design includes competent illustration of the paper with tables, slides, diagrams that have a logical connection with the material presented.

The tasks of the scientific club are realized through the following forms of scientific activity:

- participation in international, national and regional scientific and practical conferences, seminars, round tables.

- preparation of scientific articles (abstracts) by students for publication in scientific journals.

- participation in competitions of student research papers, subject competitions.

- meetings with famous histologists of Ukraine.

Conclusions and prospects for further research. 1. The work of the student scientific club at the Department of Histology and Embryology is performed at a high level and contributes to the development of the research potential of higher education students. It helps to train highly qualified

young scientists by developing their clinical thinking based on deep theoretical knowledge. It also allows higher education applicants to prepare solid research papers. This intensifies the educational process, contributes to their professional development, and helps to integrate creativity with theoretical knowledge and practical skills. Research work develops students' analytical thinking and skills in working with scientific literature, promotes a deeper understanding of the essence of the problem under study, and maximizes their individuality, creativity, and readiness for self-realization. All this creates conditions for the formation of a qualified doctor. 2. Throughout the existence of the student scientific club at the Department of Histology and Embryology of the Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine, every year the members of the clubs have won prizes at intra-university, inter-university and international scientific conferences and congresses. This experience is invaluable, as it allows them to gain the necessary knowledge and skills that are important for further choosing a medical specialty.

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THE WORK OF THE STUDENT SCIENTIFIC CLUB AT THE DEPARTMENT OF HISTOLOGY, CYTOLOGY AND EMBRYOLOGY OF THE IVAN HORBACHEVSKY TERNOPIL NATIONAL MEDICAL UNIVERSITY OF THE MINISTRY OF HEALTH OF UKRAINE

Abstract. Students' research activities are an important means of organizing their academic work for in-depth study of various aspects of histology, cytology and embryology. An important stage in the formation of a future specialist is the student's independent work, during which teachers identify the most proactive and interested students who continue their research within the activities of the student scientific club of the department. The student scientific club, which was created at the Department of Histology and Embryology of the Ivan Horbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine, contributes to the improvement of scientific training of higher education students, their organization, formation of scientific independence, responsible attitude to learning, development of communication skills between peers and team spirit. The main goal of the scientific club is to train well-rounded and highly qualified doctors. The members of the club are actively involved in modeling experiments, making histological microdissections, conducting morphometric studies, analyzing the morphological structure with a light microscope, and presenting the results of their work in scientific abstracts and articles. During the existence of the student scientific club at the Department of Histology and Embryology, its members annually win prizes at intra-university, inter-university and international scientific conferences and congresses.

Key words: scientific club, histology and embryology, experiment, microdissection, research work.

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Надійшла 17.10.2024 р.