

факультетом последипломного образования по подготовке и повышению квалификации врачей и интернов. Проведено распределение слушателей в разрезе вида обучения (специализация, предаттестационный цикл, стажировки, тематическое усовершенствование), в разрезе врачебных и фармацевтических специальностей и по географическому признаку.

**Ключевые слова:** последипломное медицинское образование, первичная специализация, повышение квалификации.

### ANALYSIS OF PREPARATION AND ADVANCED TRAINING OF DOCTORS, PROVIDORS AND INTERNS OF THE POSTGRADUATE EDUCATION FACULTY OF DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY

Sichkoriz O. Ye.

**Abstract.** The article analyzes the performance of the Postgraduate Education Faculty of Danylo Halytsky Lviv National Medical University in 2014 – 2018, according to the form of study, type of study, structure of the students and regional specificity.

When analyzing the students of the Postgraduate Education Faculty according to the form of study, there is a tendency of the numbers to decrease in students who have undergone advanced training at state-funded education from 83.14% to 77.96%, and the tendency to increase in the share of students studying under contract from 16.86 % to 22.04%.

It was revealed that medical specialists who passed the pre-certification cycle before the next certification for the award or confirmation of qualification category and thematic improvement in separate sections of the respective specialty prevailed among the students of Postgraduate Education Faculty of state-funded education. Meanwhile, among the students studying under contract, the dominant type of study was the apprenticeship.

The structure of the students of the Postgraduate Education Faculty is dominated by doctors (91.99% – 88.56%), but there is a tendency for an increase in the share of pharmacists undergoing advanced training under contract.

The analysis of the plan implementation by the Postgraduate Education Faculty for the Preparation and Advanced Training of Physicians and Interns in 2014-2018 revealed that the plan was not fulfilled by the number of students of state-funded education, except in 2015, when the plan was fulfilled by 100.64%. While internships show a failure to fulfill the plan by the number of interns of state-funded education in 2014 – 2016 (93,47% – 97,11%) and over fulfillment of the plan in the next two years (105,24% in 2017 and 115, 90% in 2018).

**Key words:** medical postgraduate education, primary specialization, advanced training.

*Рецензент – проф. Білаш С. М.  
Стаття надійшла 20.11.2019 року*

DOI 10.29254/2077-4214-2019-4-2-154-275-277

UDC [611.018:612.84]371.31

*Yakushko O. S., Yeroshenko G. A., Boruta N. V., Vilkhova O. V., Skotarenko T. A.*

### INTERDISCIPLINARY APPROACH TO TEACHING HISTOPHYSIOLOGY OF VISUAL ORGAN Ukrainian Medical Stomatological Academy (Poltava)

[gala\\_umsa@ukr.net](mailto:gala_umsa@ukr.net)

Contemporary clinical medicine requires the physician to obtain the clinical experience in the shortest term that remains the only criterion of the development of his/her clinical thinking. Clinical thinking is a process of dialectic thinking that provides integrity and completeness of medical knowledge [1-3]. The primary objective for educators is the formation of clinical thinking in students, starting from the first years of study, stimulating them to learning and providing with sufficiently high level of training on major subjects, required for future practical activity [4,5].

Histology, cytology and embryology as a subject, takes a leading place in the training of future medical professionals, aiming at the formation of the fundamental grounds for mastering of other theoretical and clinical disciplines [6,7]. Morphofunctional comparisons used by an educator in class are crucial for the development of clinical thinking in students, since histological structure of tissues or organs is explained by the necessity to perform various functions [8,9]. Knowledge of morphological features of structural components of multiple organs and systems in norm is necessary for further study of pathology of these systems and awareness in mechanisms of disease development, formation of the symptoms and ways of their elimination. Inter-

pretation of the studied material from the position of practical medicine develops students' clinical thinking [10,11].

**The paper was aimed** at elucidation of the features of clinically oriented teaching of histology, cytology and embryology in class and the role of interdisciplinary links.

At practical lessons students acquire skills of working with photomicrographs and electron micrographs, determine histological features of cells, tissues and organs and make their differential diagnosis, which is necessary for the mastering of other theoretical and clinical disciplines.

Special attention is given to practical information while brining the new material.

Knowledge of the macroscopic structure of the visual organ, learned by the students at the Department of Human Anatomy, is essential for subsequent awareness of its microscopic structure.

Practical lessons on histology on the topic "The Visual Organ" are aimed at the students' acquisition of the basic knowledge in the peculiarities of the structure of the eyeball as the peripheral part of the visual analyzer. Students form visual presentation of the histological structure of the layers of the eye, as well as its photore-

ceptive and optical systems that can benefit for further successful mastering of the "Ophthalmology" clinical discipline.

Students study and analyze microscopic structure of the cornea in details, using a microscope, making drawings of five layers in the study sketch-book. The lecturer emphasizes that the epithelium contains free nerve endings, enabling high sensitivity of the cornea and soreness in its irritation. In case of the damage, the epithelium has a high ability to regenerate. Corneo-scleral junction in an area, known as the limbus, contains stem cells involved in regeneration. Corneal transparency is ensured by specific features of its structure, which can be altered in case of damage. The functional value of the anterior basement membrane of cornea (Bowman's membrane), posterior basement membrane of cornea (Descemet's membrane) and posterior epithelium is noteworthy. The acquired knowledge is enhanced by the solving of situational tasks, which is a prerequisite for the formation of clinical thinking.

Introduction to the vascular layer involves explanation of the specific histological structure of the iris, choroid in concordance with performed functions. Histology-biophysics interaction is clearly traced during the study of the structure of the ciliary body. The structure of accommodative apparatus of eye during tension and at rest is explained in details. Morphological substantiation of the appropriateness to keep to hygienic norms during reading, writing and work at computer is given. Further acquisition of knowledge on the subjects on ophthalmology and understanding of the peculiarities of the course and treatment of such disease as glaucoma is not possible without detailed study of morphological features of the corner of the anterior chamber of the eyeball in histology classes.

Study of the histological sections of the retina, known as photo receptive portion of the eyeball, is of significant importance. Having finished the discussion and diagnostics of the structure of the retina in light and in the dark, students consolidate the knowledge by making drawings of the specimens in the study sketch-books. The ultramicroscopic structure of the photosensor cells, namely, rods and cones, and their functions is studied in details. Classes on histology provide with the fundamentals of three-component theory of color vision, normal perception of colors and possible variants of its deviation.

Students are introduced to such concepts as the disk of optic nerve, blind spot, fovea centralis. The acquired knowledge not only increase motivation to study, as the established impression on histology as a purely theoretical subject is eliminated, but also forms the fundamentals of clinical thinking.

The detailed analysis of the light-conducting and light-refracting structures of the eye, except the cornea, is followed by the study of the microscopic structure of the lens and the vitreous body. Noteworthy, the lens is a

biconvex structure, which loses its elasticity and ability to accommodation with age, leading to such phenomenon as presbyopia. The condition at which the crystalline lens lose its transparency (cataract), leads to vision deterioration and requires surgical treatment.

Regarding the structure of the accessory apparatus of the eye, the morphofunctional significance of conjunctiva and timely and adequate treatment of its inflammation (conjunctivitis) is noteworthy. While analyzing the histological structure of the eyelids it should be highlighted that they are based on the striped muscular tissue, and tarsal plate ensures the shape of the eyelids, which consists of the dense fibrous tissue. It is the density that gives it an incorrect name: palpebral cartilage. The tarsal glands (Meibomian glands), long sebaceous glands of the alveolar type embedded in the tarsal plates. Their dysfunction can lead to inflammation of the eyelids, and the blockage of the secretion can lead to chalazion. Infectious inflammation of the sebaceous glands of eyelashes (glands of Zeis) leads to the onset of stye.

The structure of the lacrimal gland and the apparatus of lacrimation is studied in details, considering their functional peculiarities.

Thus, during the discussion of the structural features of the eyeball components and its accessory apparatus the students form the integral picture of the existence of inseparable relation of its structure with performed functions. Finding out this interconnection together with the understanding of disturbances in the structure and function in pathological processes ensures the formation of clinical thinking.

Notably, while teaching the subject "Histology, Cytology and Embryology" an educator should both form the basic theoretical knowledge of microscopic and ultramicroscopic structure of cells, tissues, organs necessary for study the clinical disciplines, and provide with fundamentals for further understanding of the progress of various pathological processes, caused by dysfunction and impaired structure, which is a prerequisite for the development of clinical thinking.

**Conclusions.** The resulting analysis of the long experience of teaching histology, cytology and embryology has established that the use of clinically oriented approach to presenting the new material and consideration of interdisciplinary links leads to improvement of quality of students' training, increases their motivation and is a guarantee for the formation of clinical thinking in future medical professionals starting already from the first years of study.

The faculty members of the Department of Histology, Cytology and Embryology have developed algorithms of presentation of new material on the basis of interrelation of histology with anatomy, physiology, biochemistry, enabling a student to develop a sense of integrity and consistency of learning medicine.

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### МІЖДИСЦИПЛІНАРНИЙ ПІДХІД ДО ВИВЧЕННЯ ГІСТОФІЗІОЛОГІЇ ОРГАНУ ЗОРУ

**Якушко О. С., Ерошенко Г. А., Борута Н. В., Вільхова О. В., Скотаренко Т. А.**

**Резюме.** Першочерговим завданням перед педагогами вищої школи стоїть формування клінічного мислення у студентів, починаючи з перших курсів навчання. Гістологія, цитологія та ембріологія, як навчальний предмет, посідає провідне місце у підготовці майбутніх медиків, вивчення якого формує фундаментальну базу для опанування інших теоретичних та клінічних дисциплін. Основною метою вивчення теми «Орган зору» на практичних заняттях з гістології є закладання базового фундаменту знань особливостей будови очного яблука як периферійної частини зорового аналізатора. Студенти вивчають гістологічну будову оболонок, світлопровідної та світлосприймаючої систем ока, допоміжного апарату, що сприяє формуванню цілісної картини існування нерозривного зв'язку будови з виконуваними функціями. З'ясування цього зв'язку разом з розумінням порушення структури і функції при патологічних процесах є запорука формування клінічного мислення.

**Ключові слова:** клінічне мислення, міждисциплінарні зв'язки, гістологія, офтальмологія.

### МЕЖДИСЦИПЛИНАРНЫЙ ПОДХОД К ИЗУЧЕНИЮ ГИСТОФИЗИОЛОГИИ ОРГАНА ЗРЕНИЯ

**Якушко Е. С., Ерошенко Г. А., Борута Н. В., Вильховая Е. В., Скотаренко Т. А.**

**Резюме.** Первоочередной задачей перед педагогами высшей школы стоит формирование клинического мышления у студентов, начиная с первых курсов обучения. Гистология, цитология и эмбриология, как учебный предмет, занимает ведущее место в подготовке будущих медиков, изучение которого формирует фундаментальную базу для освоения других теоретических и клинических дисциплин. Основной целью изучения темы «Орган зрения» на практических занятиях по гистологии является закладка базового фундамента знаний особенностей строения глазного яблока как периферической части зрительного анализатора. Студенты изучают гистологическое строение оболочек, светопроводящей и световоспринимающей систем глаза, вспомогательного аппарата, способствует формированию целостной картины существования неразрывной связи строения с выполняемыми функциями. Выяснение этой связи вместе с пониманием нарушения структуры и функции при патологических процессах является залогом формирования клинического мышления.

**Ключевые слова:** клиническое мышление, междисциплинарные связи, гистология, офтальмология.

### INTERDISCIPLINARY APPROACH TO TEACHING HISTOPHYSIOLOGY OF VISUAL ORGAN

**Yakushko O. S., Yeroshenko G. A., Boruta N. V., Vilkhova O. V., Skotarenko T. A.**

**Abstract.** The primary objective for educators is the formation of clinical thinking in students, starting from the first years of study, stimulating them to learning and providing with sufficiently high level of training on major subjects, required for future practical activity. Histology, cytology and embryology as a subject, takes a leading place in the training of future medical professionals, aiming at the formation of the fundamental grounds for mastering of other theoretical and clinical disciplines. Knowledge of morphological features of structural components of multiple organs and systems in norm is necessary for further study of pathology of these systems and awareness in mechanisms of disease development, formation of the symptoms and ways of their elimination. Interpretation of the studied material from the position of practical medicine develops students' clinical thinking. Practical lessons on histology on the topic "The Visual Organ" are aimed at the students' acquisition of the basic knowledge in the peculiarities of the structure of the eyeball as the peripheral part of the visual analyzer. Students form visual presentation of the histological structure of the layers of the eye, as well as its photoreceptive and optical systems that can benefit for further successful mastering of the "Ophthalmology" clinical discipline. Thus, during the discussion of the structural features of the eyeball components and its accessory apparatus the students form the integral picture of the existence of inseparable relation of its structure with performed functions. Finding out this interconnection together with the understanding of disturbances in the structure and function in pathological processes ensures the formation of clinical thinking.

The analysis of the long experience of teaching histology, cytology and embryology has established that the use of clinically oriented approach to presenting of the new material and consideration of interdisciplinary links leads to improvement of quality of students' training, increases their motivation and is a guarantee for the formation of clinical thinking in future medical professionals starting already from the first years of study.

**Key words:** clinical thinking, interdisciplinary links, histology, ophthalmology.

*Рецензент – проф. Білаш С. М.  
Стаття надійшла 09.12.2019 року*