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TEACHING PARASITOLOGY AND THE ROLE OF STAFF TRAINING IN THE COMBAT AGAINST PARASITIC DISEASES

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ПРЕПОДАВАНИЕ ПАРАЗИТОЛОГИИ И РОЛЬ ПОДГОТОВКИ ПЕРСОНАЛА В БОРЬБЕ С ПАРАЗИТАРНЫМИ ЗАБОЛЕВАНИЯМИ

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Abstract. This article analyzes the teaching of parasitology and the role of staff training in the fight against parasitic diseases. Parasitic diseases, especially malaria and intestinal helminthiasis, affect a large part of the world's population and pose serious problems for both human health and socio-economic development. According to the World Health Organization, billions of people suffer from parasitic diseases, which necessitates the training of highly qualified personnel in the field of parasitology. The article emphasizes the importance of parasitology curricula, modern educational methods and practical training. The knowledge and skills of staff are at the forefront in the diagnosis, treatment and prevention of parasitic diseases. The role of a multidisciplinary approach and scientific research in staff training is also noted. As a result, the teaching of parasitology and the improvement of personnel training are considered a key factor in strengthening the health system and effective prevention of parasitic diseases.

Аннотация. Анализируется роль подготовки кадров в преподавании паразитологии и борьбе с паразитарными заболеваниями. Паразитарные заболевания, особенно малярия и кишечные гельминтозы, поражают значительную часть населения мира и создают серьезные проблемы как для здоровья человека, так и для социально-экономического развития. По данным Всемирной организации здравоохранения, паразитарными заболеваниями страдают миллиарды людей, что обусловливает необходимость подготовки высококвалифицированных кадров в области паразитологии. В статье подчеркивается важность учебных программ по паразитологии, современных методов обучения и практической подготовки. Знания и умения персонала имеют первостепенное значение в диагностике, лечении и профилактике паразитарных заболеваний. Отмечена роль междисциплинарного подхода и научных исследований в подготовке кадров. В результате преподавание паразитологии и улучшение подготовки кадров считаются ключевым фактором укрепления системы здравоохранения и эффективной профилактики паразитарных заболеваний.

Keywords: parasitic diseases, prevention, teaching, personnel training, diagnostics, treatment, socio-economic importance.

Т. 11. №12 2025
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Ключевые слова: паразитарные заболевания, профилактика, образование, подготовка кадров, диагностика, лечение, социально-экономическое значение.

Parasitic diseases remain a serious challenge for world health. Malaria, helminthiasis and other parasitic infections are widespread, especially in developing countries, and have a negative impact on human health and socio-economic development. Billions of people in the world suffer from these diseases, and these numbers are increasing every year. The shortage of specialists in the field of diagnostics, treatment and prevention of parasitic diseases further deepens the problem. In such a situation, teaching parasitology on a scientific basis and training professional personnel is of great importance in protecting human health and combating diseases. The relevance of the topic also stems from the need to develop new educational programs and improve parasitological knowledge. This is important for implementing effective measures for the prevention and treatment of parasitic diseases.

One of the most important tasks in the field of health today is to reduce the spread of infectious and parasitic diseases, or even completely eliminate them. The role of parasitology in achieving this goal is very large, and this field of science is important both theoretically and practically. Parasitology is the science that studies parasites living in the human body, the diseases they cause, and methods of combating them. Medical parasitology studies the life cycle, pathogenesis, clinical symptoms, spread, immune responses, and treatment of the causative agents of parasitic diseases in humans, as well as preventive measures.

The structure and life activity of parasites are more complex than that of microorganisms. Therefore, their effects on the body are wider and more diverse. Parasites are mainly activated when the host's defense system is weakened, and in these cases, disorders such as allergies and weakened immunity are observed. As a result, infected individuals become more susceptible to other infectious diseases, and their resistance to environmental stress factors decreases. Recently, the incidence of many parasitic diseases becoming more severe in combination with other infections has increased.

The term parasitology is derived from Greek words and means "living at the expense of another." This science studies parasites, their interactions with host organisms and the environment, as well as the ways in which the diseases that accompany them arise and develop. The main goal of parasitology is the study of the complex relationships between the parasite and the host organism and their relationship with external factors. Therefore, parasitology belongs not only to the group of biological, but also to the group of ecological sciences [4].

One of the main tasks facing this science is to study the structure, life cycle, distribution area of parasites, as well as their adaptation to living in the host organism. The most important issue is to protect human health and protect agricultural animals and plants from parasitic diseases. For this purpose, parasitology is closely related to medicine, zoology, botany, veterinary medicine, chemistry and other fields. Analysis of the interaction of parasites with the host organism and the environment allows for the expansion of scientific knowledge and the development of effective measures to combat parasitic diseases. The science of parasitology is also closely related to epidemiology and epizootology and studies the main regularities of the occurrence of infectious diseases [6].

Materials and methods

To conduct the study, extensive scientific sources, classic textbooks, modern methodological aids and research articles published in international scientific journals on the teaching of parasitology and the training of personnel in the fight against parasitic diseases were examined. In

Т. 11. №12 2025
https://doi.org/10.33619/2414-2948/121

order to trace the historical development of the educational process, the formation of parasitology as a scientific discipline, its application in the medical and veterinary fields and teaching models in different countries were analyzed in chronological order. The teaching methods used in modern times, laboratory diagnostic technologies, molecular biology and immunological approaches were studied and a comparative analysis was conducted. The curriculum of parasitology in higher and secondary specialized educational institutions, personnel training strategies and the structure of advanced training courses were analyzed. Analytical-synthetic, comparative-analytical and statistical approach methods were used to systematize the collected data, and the role of microscopic, serological and molecular methods used in laboratory and clinical experiments in teaching was also examined. As a result of this approach, the current state and development directions of parasitology specialist training were determined.

Discussion of the results obtained

Parasites are organisms that live in or on the bodies of other living things, finding food and shelter. These organisms that cause diseases in humans, animals and plants are very diverse and include prions, viruses, bacteria, protozoa, parasitic worms and different types of arthropods. Parasites harm organisms and negatively affect their health. Some microorganisms (prions, viruses, bacteria) cause infectious diseases, while protozoa and helminths cause parasitic diseases. At the same time, some fungi also cause diseases and are called mycoses. In this regard, protozoa and helminths mainly cause parasitic diseases, and sometimes the influence of arthropods is also noted. Of the 1415 known pathogens in humans, 353 are of protozoan and helminth origin [7].

The science of parasitology is divided into various fields: general parasitology studies the basic laws and classification of parasitism, medical parasitology studies human diseases and their parasites, veterinary parasitology focuses on animal parasites and diseases, and phytoparasitology studies plant parasites and diseases associated with them. The main directions of parasitology are divided into three subfields: protozoology (protozoa), helminthology (parasitic worms), and arachnoentomology (arthropod parasites) [1].

Medical parasitology is especially important for human health. Diseases caused by protozoa such as giardiasis, malaria, and toxoplasmosis are widespread in the world and cause serious problems. Highly trained specialists are necessary for the diagnosis, treatment, and prevention of these diseases. Helminthiasis, that is, diseases caused by parasitic worms, are also widespread and are of great socio-medical importance. Their spread is closely related to geographical and ecological factors, and some helminthiasis are classified as naturally occurring diseases [3].

Scientific teaching of parasitology and training of personnel in the relevant field are of vital importance for the effective management and prevention of parasitic diseases. The knowledge and skills acquired in education enable specialists working in the field of parasitology to diagnose diseases, treat patients, and develop new preventive measures. This, in turn, makes a great contribution to the development of public health and agriculture, and to the protection of animal and plant health [2].

Thus, the teaching of parasitology in higher education institutions and scientific research, as well as the training of qualified personnel, acts as a key factor in the fight against parasitic diseases. The professionalism of specialists working in this field plays an important role in the prevention of epidemics, the timely detection of diseases, and the application of effective treatment methods. The multidisciplinary nature of parasitology also supports the development of ecological, biological, medical, and agricultural fields [8].

Parasitology, as a scientific field, studies the biological and ecological characteristics of various parasitic organisms that pose a threat to human health, the ways in which they spread the

Т. 11. №12 2025
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diseases they cause, and strategies for combating them. One of the main objects of research in this field is arthropods. These creatures do not only exist in the human body as parasites, but also act as active vectors of a number of serious diseases. For example, infections such as malaria, leishmaniasis, encephalitis, relapsing and remitting typhus, plague, and yellow fever are transmitted precisely through arthropods.

Among arthropods, ticks and some insects occupy an important place. They directly parasitize human tissues and organs, causing serious pathological processes, and also play the role of carriers or reservoirs of diseases, creating conditions for the widespread spread of infection [12].

Rodents also play an important role in this process, acting as carriers of certain parasitic infections. Such cases show that the destruction of vectors — that is, disinfestation measures - is of great importance for effective infection control and disease control [5].

One of the central concepts in the theoretical basis of parasitology is “parasitism”. This is a form of biotic relationship in which one organism uses another organism for survival and nutrition, but harms the host organism. Parasitism occupies a special place among biological interactions. Although neutral or mutually beneficial relationships such as synoikia, mutualism, commensalism have been observed between organisms at different times, parasitism is more often distinguished as a harmful and antagonistic form. Parasitic organisms are more numerous in nature than free-living species and in almost all cases are forced to enter into a relationship with a host in order to survive.

Currently, the teaching of parasitology is not only limited to providing theoretical knowledge, but also has strategic importance in terms of practical training and staffing in the healthcare system. In particular, in recent years, the teaching of the subject “Parasitology” has been expanded at Azerbaijan Medical University, and within the framework of this course, students are provided with comprehensive information on the biology of parasitic organisms, epidemiology and prevention of the diseases they cause, diagnostic methods and control measures.

The main goal of the subject is to familiarize students with the types of parasitic diseases common in humans, their specific clinic, laboratory diagnostics and anti-epidemic approaches to infection control. In addition, through this course, students are taught the dynamics of the interaction of parasites with host organisms, the ecological characteristics of vectors, as well as the basic principles of epidemiological control and monitoring systems implemented at the state level.

This format of education, which meets modern requirements, ensures that future healthcare workers are ready to effectively combat parasitic diseases. Thus, the preparation of specialists who deeply master the scientific and practical aspects of parasitology plays a fundamental role in protecting society against infectious threats.

During the educational process, students should comprehensively study not only the morphology and biology of parasites, but also the pathogenesis, clinical symptoms, diagnostics and prevention of parasitic diseases. The mechanisms of interaction between the parasite and the host organism, the biological and ecological basis of parasitism, the ways of its spread and the natural and social factors influencing the formation of foci of disease are among the main topics of this subject [9].

During the educational process, students acquire systematic knowledge about helminths and protozoan pathogens. They should be able to distinguish different stages of parasite development, apply microscopic diagnostic methods and interpret the results of parasitological analysis. For example, the “thick drop” and “blood smear” methods used in the diagnosis of diseases such as malaria and leishmaniasis are indispensable in their professional training [7].

The newly developed curriculum covers three main areas: protozoology (primary parasites), helminthology (worm-type parasites) and methodology of parasitological laboratory examinations. The purpose of this program is not only to provide theoretical knowledge, but also to develop the

Т. 11. №12 2025
https://doi.org/10.33619/2414-2948/121

practical skills of students. Thus, they learn the techniques of conducting sanitary-helminthological and laboratory parasitological examinations and participate in the detection of various parasitological diseases.

The following topics are the main ones in the teaching of the subject: the subject and history of development of parasitology, forms and classification of parasitism, the main diseases caused by parasites (ascariasis, enterobiosis, teniarhinosis, echinococcosis, etc.), the clinic, diagnostic methods and preventive measures of these diseases. At the same time, the role of social factors, water and soil factors, as well as vector organisms in the spread of parasitic infections is particularly emphasized [10].

During the study period, students' theoretical and practical knowledge is checked through various assessment methods: tests, laboratory tasks, presentations and independent work. This strengthens their preparation in both academic and applied fields.

Conclusion

Teaching parasitology is important in terms of forming the epidemiological knowledge and preventive approaches of future health professionals. Students gain the ability to understand the epidemiological model of parasitic diseases, analyze the risk factors that cause the spread of diseases, apply modern diagnostic methods and plan counter-epidemic measures. It is recommended that this subject be taught not only in medical and health faculties, but also in the fields of ecology, biology and education. Modern parasitology plays an important role in protecting public health and building sustainable health strategies.

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