Academicia Globe:
Inderscience Research

ISSN: 2776-1010 Volume 3, Issue 7, July, 2022

NUCLEAR MEDICINE IN HIGHER EDUCATION INSTITUTIONS OF THE REPUBLIC OF UZBEKISTAN: CURRENT STATUS AND PROSPECTS

Jasur Djuraevich Ashurov
Department of "Innovative and Information Technologies in Medicine, Biophysics" of the Bukhara State Medical Institute

ЯДЕРНАЯ МЕДИЦИНА В ВУЗАХ РЕСПУБЛИКИ УЗБЕКИСТАН: СОВРЕМЕННОЕ СОСТОЯНИЕ И ПЕРСПЕКТИВЫ

Жасур Джураевич Ашуров

Кафедра «Инновационные и информационные технологии в медицине, биофизика» Бухарского государственного медицинского института.

Качество и эффективность преподавания любого предмета зависит от масштабов применения современных методов обучения в данной области и оснащенности клинических баз высших учебных заведений. Подготовка кадров с соответствующими знаниями, навыками и компетенциями также важна в области ядерной медицины для оказания оптимально безопасных медицинских услуг и проведения качественных исследований. Современная ядерная медицина состоит из отделений радионуклидной диагностики и радионуклидной терапии. В статье рассмотрено и проанализировано современное состояние подготовки кадров в республике, применяющих радионуклидные методы в обследовании и терапии органов и систем организма человека. В статье рассмотрено и проанализировано современное состояние подготовки кадров в развитых странах и в Республике Узбекистан, работающих в области обследования и терапии органов и систем организма человека радионуклидными методами.

Ключевые слова: ядерная медицина, радионуклидная диагностика, радионуклидная терапия, радиофармацевтический препарат.

Ҳар қандай фанни ўқитишнинг сифат ва самарадорли замонавий таълим методларининг соҳага тадбиқ этиш қамровининг кенглигига ва олий таълим муассасалари клиник базаларинининг жиҳозланишга боғлиқ. Ядро тиббиёти соҳаси оптимал тарзда хавфсиз тиббий хизматларни кўрсатиш ва юқори сифатли текширувларни амалга оширишда тегишли билим, кўникма ва малакаларга эга бўлган кадрларни тайёрлаш ҳам муҳим аҳамият касб этади. Замонавий ядро тиббиёти радионуклид диагностикаси ва радионуклид терапияси бўлимларидан иборат. Ҳозирги кунда ривожланган давлатларда ва Ўзбекистон Республикада инсон танаси аъзолари ва тизимларни текшириш ва терапиясида радионуклид усулларидан фойдаланиб фаолият олиб борадиган кадрларни тайёрлашнинг ҳолати мақолада кўриб чиқилган ҳамда таҳлил қилинган.

Калит сўзлар: ядро тиббиёти, радионуклид диагностикаси, радионуклид терапияси, радиофармацевтик препарат.

Academicia Globe:
Inderscience Research

ISSN: 2776-1010 Volume 3, Issue 7, July, 2022

Abstract

The quality and effectiveness of teaching any subject depends on the scale of application of modern teaching methods in this area and the equipment of the clinical bases of higher educational institutions. The training of personnel with relevant knowledge, skills and competencies is also important in the field of nuclear medicine to provide optimally safe medical services and conduct quality research. Modern nuclear medicine consists of departments of radionuclide diagnostics and radionuclide therapy. The article considers and analyzes the current state of training in the republic, applying radionuclide methods in the examination and therapy of organs and systems of the human body. The article considers and analyzes the current state of training in developed countries and the Republic of Uzbekistan, working in the field of examination and therapy of organs and systems of the human body by radionuclide methods.

Key words: nuclear medicine, radionuclide diagnostics, radionuclide therapy, radiopharmaceutical.

Introduction

The successes of nuclear physics in recent years have had a great influence on the development of many areas. The development of nuclear energy has given scientists new tools and methods for conducting scientific research in various fields. The possibilities of scientific knowledge have expanded significantly. From the beginning, scientific medicine has drawn new ideas and tools from physics and chemistry to prevent and control disease. For example, the discovery of X-rays at the end of the last century led to the fact that today even a small medical institution is equipped with an X-ray machine.

The use of atomic energy for medicine is of particular importance. This area of science has been enriched with new, very valuable methods for studying life processes, diagnosing and treating diseases. In particular, the emergence of radionuclide diagnostics and radionuclide therapy in nuclear medicine has led to major changes in medicine and the widespread use of hybrid imaging, analytical methods and computed tomography in world-class medical institutions.

At the same time, in medicine, the use of ionizing radiation is aimed at diagnosing or treating a patient, while the patient is required to receive a minimum dose, but in most cases unreasonably high doses are used [1]. Statistical studies show that, despite advances in the treatment of many diseases, mortality from cardiovascular, oncological and many other diseases is very high.

There is now a growing awareness that medicine depends on the availability of qualified health professionals who have received appropriate training in the safe use and application of ionizing radiation. For example, the Member States of the International Atomic Energy Agency provide a large amount of funds to finance the field of nuclear medicine, but in many developing countries there is a lack of expert resources. In some regions, there is not enough nuclear medicine knowledge to support targeted training programs and resource generation. Other regions have training programs and resources, but they do not meet the requirements of a growing industry. The latter situation is also observed in our Republic..

Academicia Globe:
Inderscience Research

ISSN: 2776-1010 Volume 3, Issue 7, July, 2022

Another difficult aspect of nuclear medicine education is the lack of demonstration, that is, the limited opportunity to demonstrate various experimental processes. The reason for this is that many experiments have a detrimental effect on the human body, and in the bases of educational institutions there is no way to use all the means and precautions.

It is for this reason that in the process of acquiring knowledge, skills and qualifications related to nuclear medicine, along with traditional resources, it is necessary to study the possibility of using electronic educational resources, including multimedia tools.

In the national strategy for the further development of the Republic of Uzbekistan, the priority task is "an in-depth study of such important and sought-after subjects as physics, ... the creation of effective mechanisms for the implementation of scientific and innovative achievements" and as a priority for higher education is also the improvement of nuclear medicine, the systematization of its complex modern teaching methods, forms, means and pedagogical opportunities, as well as the creation of new generation teaching aids [2].

When conducting scientific and innovative research in this direction, the priority is: 1. Analysis of the situation on the problems that have arisen in the scientific and methodological literature and in the practice of the educational process. 2. Based on the content of the training material, it is necessary to clarify the elements necessary for the development of electronic resources for nuclear medicine.

The addition of practical pedagogical activity with the introduction of new technologies creates a new look at the modern environment of higher education. In this regard, higher education institutions must solve certain tasks, including [3,9,10]:

- Improvement and updating of modern information and communication infrastructure and software and hardware;
- Training of teaching staff with certain skills and qualifications in the field of information technology;

The current situation associated with a more active use of new technologies in education requires a change in scientifically based theoretical models and standards for solving pedagogical problems..

In fact, thanks to the active introduction of information technologies, the possibility of preparing electronic resources and multimedia tools in subjects, practical pedagogical activity is filled with the following new opportunities [4,5,6,7,8]:

1. Use of specially prepared (pedagogically adapted) and audio and video materials in the network;
2. Using various programs to create presentation materials for the course;
3. Network access to electronic libraries, databases, scientific journals for educational purposes;
4. Use of digital copies of educational literature, specially prepared electronic textbooks.

In the process of teaching nuclear medicine, concepts such as the physical foundations of nuclear medicine, the atomic nucleus and nuclear reactions, ionizing radiation, radioactive decay, the effect of radiation on matter, including biological objects, depending on the direction of study and specialization, are considered. These questions are considered very important and form the basis for the development of students' worldview ideas about the world around them, as well as gaining knowledge about practical nuclear physics. Through the creation of electronic resources and multimedia tools that make it possible to demonstrate the essence of these concepts, it will be possible

ISSN: 2776-1010 Volume 3, Issue 7, July, 2022

to achieve the training of highly qualified personnel in the field of nuclear medicine and improve the quality and efficiency of medical services..

Conclusion

The quality and effectiveness of teaching nuclear medicine is related to the breadth and completeness of its application in clinical practice, as well as the availability of modern equipment in the laboratories of the university. To master advanced PET technology, first of all, it is necessary to create a basic service for radionuclide diagnostics in nuclear medicine with a modern gamma camera, single photon emission tomography or its combination with CT (SPECT or SPECT/CT).

First of all, it is necessary to open laboratories in cities with medical universities. Secondly, in order to raise domestic medical science to the international level, it is necessary to strengthen the cooperation between research institute laboratories and higher educational institutions. Thirdly, for a more complete coverage of the population in need of radionuclide diagnostics in the republic, it is necessary to train a new generation of radionuclide diagnostics doctors through a new approach to the issue of providing laboratories with highly qualified personnel in regional centers and large cities..

The training of specialists in the field of radiation diagnostics in the republic is at a very high level, among them it is necessary to correctly select a certain number of doctors and retrain them, and in this process it is advisable to create electronic resources and multimedia tools and use them in this process.

Literature

1. Трансконтинентальное обучение: МАГАТЭ открывает платформу дистанционного онлайнового обучения datol // Бюллетень МАГАТЭ 55-4-декабрь 2014. –С. 34-35.
2. Ўзбекистон Республикаси Президентининг 2017 йил 7 февралдаги ПФ-4947-сон «Ўзбекистон Республикасини янада ривожлантириш бўйича Ҳаракатлар Стратегияси тўғрисида» ги Фармони. – Ўзбекистон Республикаси қонун ҳужжатлари тўплами, 2017 й., 6-сон, 70-модда.
3. Ashurov Jasur Djo'rayevich, Zamonaviy ta'lim muhitida raqamli pedagogikaning o'rni va ahamiyati //Euroasian journal of academic research, 2021, Vol1, No9 https://zenodo.org/record/5776796#.YdUkUB__Skq
4. Ashurov Jasur Djurayevich, Opportunities of Digital Pedagogy in A Modern Educational Environment // Journal of Pedagogical Inventions and Practices, 2021. Vol 3, P.103-106 https://zienjournals.com/index.php/jpip/article/view/448/345
5. ЖД Ашуров, И Нуритдинов, СХ Умаров Влияние температуры и примесей элементов I и IV групп на тензорезистивные свойства монокристаллов $TlInSe_2$. //Перспективные материалы, 2011, -с. 11-14
6. Ashurov Jasur Djo'rayevich, Education and pedagogy // Journal of Pedagogical Inventions and Practices, 2021. Vol 3, P.179-180 http://zienjournals.com/index.php/jpip/article/view/534/423
7. Asadova Yu.I. Passing the Traditional Lesson with the Help of Open Moodle Platforms. International journal on human computing studies. https://journals.researchparks.org/index.php/IJHCS e-ISSN: 2615-8159 | p-ISSN: 2615-1898. Volume: 03 Issue: 5 |Jul 2021 P-1-8
8. Asadova Yu. [Using the moodle platform to organize training during the covid-19 pandemic]/ Education and innovative research №1 http://www.interscience.uz 2021- P.44-54 (In English).