

Comparative characteristics of educational methods of the pre-university medical programs of the Russian Federation and the Republic of Korea

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Abstract. This article examines and compares educational methods which are used to prepare students for admission to medical universities in South Korea and Russia, identifies and describes differences between those methods connected with the history of medical education, attitude to studying, mentality and other cultural and social characteristics. Medical universities and chemical and biological classes in both countries have something to learn from their foreign colleagues.

Keywords: pre-university medical education, South Korea, Russia, university, Seoul National University, Medical Sechenov Pre-University, medical sciences.

Introduction

Medicine is one of the most important bodies of sciences in the modern world. This system allows people to recognize, treat and prevent diseases, strengthen the health and work capacity of people and prolong lives. It is especially important that students of medical classes become qualified specialists. The pre-medical curriculum is a mandatory period for medical students to prepare before they move on to higher medical education institutions.

We reviewed the experience of South Korea, as a leading country in terms of economic growth and the level of education of the population, and Russia, because graduates of Russian medical

school work in more than 100 countries around the world and Russian universities have a rich history of training doctors.

Korean medicine has its own unique features. The legendary textbook of Korean traditional medicine "TonyiPogam" is included in the UNESCO "Memory of the World" program, which means that Korean traditional medicine is internationally recognized and functions on a par with Western medicine.

History of the development of medical education in Russia and South Korea

In Korea, traditional medicine has been widespread for centuries. Western medicine began to spread around 1700, but was criticized by scientists, which made it difficult to develop. Traditional Korean medicine is now officially recognized and regulated in the same way as Western medicine. Vocational education in traditional medicine has a structure similar to vocational education in other medical programs: doctors take a six-year bachelor's program or a four-year master's program, then they take an exam.

Early medicine of Russia, despite its leaping development after the adoption of Christianity, was still based on beliefs and superstitions. Nevertheless, monastic medicine began to apply new practical methods of medicine and improved them. Only during the reign of Yaroslav the Wise did secular medicine appear, which tried to be based on reliable facts [3].

The first hospital school was opened at a permanent land hospital in Moscow and for 26 years (1706-1733) was the only medical educational institution in Russia. More of such schools were opened in 1733. In hospital schools, future doctors showed a high general education level, knowledge of Latin, philosophy and the works of Greek and Roman writers. Hospital schools were the prototype of the Russian university, which did not yet exist at that time [4].

In the 19th century, large scientific medical schools gained international prestige, Russian medical science and health care were flourishing, which is proved by the awarding of the Nobel Prize to I.P. Pavlov and I.I. Mechnikov, the school of S.P. Botkin and G.A. Zakharyin [3].

At the same time, Western medicine was first introduced to Korea by the Korean government, and the first Jejungwon clinic was opened in Seoul. Since then, several private hospitals have been established, with the Severance Hospital in 2020 being the most renowned international institution. Here robotic technologies are used for operations and the clinic is provided with an artificial intelligence system Yubikont (Ubiquitous computing), which allows getting an accurate analysis of patients' anamnesis and examination results, and saves the time of medical personnel.

In contrast to Russian schools, until the 1970s, the typical Korean medical school was characterized by a clear division between preclinical and clinical education and between subject-oriented and lecture-oriented teaching exams focused on testing theoretical knowledge. However, since the early 1980s, there have been gradual changes in the curriculum [5].

Most Korean medical schools now combine integrated courses with conventional courses in basic medical science and clinical medicine; they can differ only in their duration. The study by E. B. Evladova proved that an integrated program is a product of the joint activities of teachers, uniting separate educational areas into a single whole. In this case, this term implies the concept of interrelation, interdependence, and interpenetration of two or more leading ideas or objects, which implies a qualitative and quantitative change in the parameters of a new idea or a new object.

One of the most important developments in medical education over the past 10 years has been the adoption of the PBL method, first tested in the Netherlands. PBL was first introduced to Korea by one of the medical schools in 1994 and is now actively practiced in all Korean medical schools. The PBL (Problem-Based Learning) method is considered a successful innovative teaching method that provides freedom to the student, which contributes to the independent search and application of information, the development of communication skills, and the ability to work independently.

In this method, the teaching emphasis shifts from a teacher to a student, who takes a more active role, trying to solve a practical problem set for them. This technique teaches students to broader and deeper comprehend everything said by a teacher during lectures and written in textbooks, it promotes original thinking and a personal approach and arouses interest to the subject. This method is most effective for seminars in the humanities, but it will also be useful in preparing, for example, for team scientific and natural works.

The OSCE method - the objective structured clinical examination, which is not widespread in Russia, is also gaining popularity in Korea. Most Korean medical schools use OSCE to test the competence of students. During the clinical objective examination (CQE), candidates are observed and evaluated and passed through the stations where the interview, examination, and treatment of standardized patients (ST) is carried out. OSCE has proven to be so effective that it is now applied not only in medicine but also in other disciplines such as dentistry, nursing, obstetrics, pharmaceuticals, engineering, and law [6].

Medical education in Korea has changed over the past 20 years. A new medical education system has emerged, the so-called "4 + 4" system. Previously, every medical school in Korea

recruited 12-year high school graduate medical students, however, since 2005, several medical schools have begun recruiting college graduate students.

The second change is that many medical schools have begun to pay more attention to the development of humanitarian and communication skills, subjects such as medical ethics and professionalism, medicine and society, etc. have appeared in the curriculum.

Features of the mentality and preparation for admission to higher education

In the process of collecting information, studying, and comparing the education systems in Russia and South Korea, we came across such a concept as "mentality", which had a great role not only in the attitude to study, but also to work, and to life itself in general. The following are some examples:

1. In South Korea, compared to Russia, there are much fewer official holidays and vacations. In Russia, the school year begins on September 1, and all schools hold a solemn line-up. In South Korea, the beginning of school is not celebrated. The academic year is divided into two semesters. Summer holidays are held from the end of July to the end of August, winter holidays - from December to February. This is due to the fact that in Korea academic competition is extremely high, a student can only cope with it by working constantly.
2. Discipline in South Korean schools is strict. School uniform, hairstyle, manicure, make-up, and hair coloring are strictly regulated. All the gadgets are stored by teachers until the end of classes. Similar practice can be observed only in a few Russian schools.
3. Exams are important for students of both countries, a failure in the exam is equated with a failure in life. Students are under enormous pressure, and in South Korea it is even higher because of the constant competition. Stress due to exams is the main cause of depression and suicidal moods in teenagers, and statistics in this regard in Korea is one of the saddest in the world. According to a 2013 Statistics Korea report, suicide was the leading cause of death for Koreans aged 9-24. Russia's situation is not comforting either. Russia occupies the fifth place in this list.
4. Teachers are respected implicitly. Teachers in Korea do not earn a lot of money, but they are absolutely respected. Education is one of the main values of Korean society, and teachers are considered its honorary guardians [8].

Studying is the main priority in the life of Koreans until graduation. There is a saying: "If in high school you sleep for three hours, then you may get into SKY (abbreviation according to the first

letters of the three most prestigious universities in South Korea: Seoul, Korea, Yonsei), if four – then in a less prestigious university, if five – then you will not be a student."

In Russia, a teacher's qualification is determined not only by their diploma, but also by the skills and abilities based on the specialist's own life experience.

Differences in preparation for admission to medical universities in South Korea and in Russia

In South Korea, high school students are prepared for admission to medical universities in specialized programs and courses:

I. Seoul National University

There is a Premedical Course. The program encourages close collaboration and integration between the medical, natural, engineering and social sciences, which helps to enhance the excellence of future doctors. The following methods are used there:

- Personalized training: individual programs are created. They match the student's abilities to optimize the amount, time, and sequence of training.
- Problem-based education: the main focus is on students' thinking process, finding ways to solve problems, and extensive analysis. This method expands the possibilities of solving problems in various situations.
- Exploring queries: Discovering and refining basic ideas and responses to them. This promotes divergent and creative thinking. Laboratory experiments, discussions, educational games, etc. increase the skills needed to solve daily tasks and to perform scientific research.
- Project-based learning: an autonomous and subjective learning method that allows students to plan and implement their projects, to develop learning activities and creativity.
- Discussion-based and presentation-based education: students exchange information and opinions and draw conclusions through interactions.
- Education using multimedia/high-tech media: using advanced devices, equipment, software, and multimedia to create live learning activities. All the sensory organs of students are used, which helps to develop their thinking abilities [7].

II. Seoul National University College of Medicine

In SNUCM, basic medical education is underpinned by personal growth, leadership skills, and altruistic principles. Students develop their clinical skills to correctly diagnose, treat patients and create research.

There are classes teaching how to use medical equipment, classrooms with simulations of various situations that the student must solve, and a 3D scanning department. A lot of sports is available to students as well.

III. There are 13 schools of natural science in South Korea

The share of graduates of specialized schools who entered the university is many times higher than that of ordinary ones. Thus, in 1995 graduates of specialized schools made up 16.2% among the applicants who successfully passed the exams at Seoul State University, which is especially impressive.

In Russia pre-university medical education is provided at universities and in schools with medical classes.

I. Pre-university education at Moscow State Medical University (Sechenov University).

The task of the faculty is to prepare applicants for admission to Sechenov University at a high level and to form their professional motivation. Students of medical and biological classes have a high level of knowledge and consciously choose the direction of their future professional activity. Excursions and classes in clinics are held for students of medical and biological classes.

The program includes the course "Step into medicine". During the course, students take part in the work of the clinics of Sechenov University, as well as learn practical skills using innovative technologies in the Virtual Training Complex "Mentor Medicus" at the Center for Continuing Professional Education.

II. The project «Medical class in a Moscow school»

The participants of the project "Medical class in the Moscow school" in 2020 are 71 schools in Moscow.

The main subjects of the program are chemistry and biology. The classes are organized five times a week. Students of medical classes with individual interests can choose additional courses: basic medical knowledge, practical training in microbiology, basic physiology and anatomy, first aid, etc. The practice of future doctors takes place in laboratories equipped with medical simulators, measuring devices, models of organs. Students learn to give injections or take blood from a vein on the mannequins.

The innovative direction of the project are the training programs developed by the University: "Chemistry in English" and "Biology in English". The purposes of the courses: mastering the

culture of bilingual scientific thinking, the ability to build oral and written scientific speech in English.

Various subject Olympiads, pre-professional master classes, conferences and other events are held during a school year.

At the end of the 11th form, students take a pre-professional exam at the University. The results of the exam are taken into account when entering the University. In addition to the pre-professional exam, students of the 10th and 11th medical classes traditionally pass an Independent Assessment of the Quality of knowledge of chemistry and biology.

III. Resource Center «Medical Sechenov Pre-University»

In 2016 First Moscow State Medical University (Sechenov University) established the Resource Center «Medical Sechenov Pre-University».

Classes are given by leading teachers of the University. Students are immersed in specialized subjects, get through some disciplines of the first year of medical school, prepare for Olympiads and conduct various scientific activities in modern biological and chemical laboratories.

Students of the Pre-university combine training in the programs of secondary general education and the university system of classes in specialized subjects with individual creative scientific and practical work. Graduates are provided with a serious preparation for admission to the best medical universities in the country.

In the spring of 2019 the rating agency RAEX performed a study of the admission of Russian schoolchildren to the best universities in the country. According to the results of the rating of schools in Russia based on the data on the admission of school graduates to 35 leading Russian universities in 99 cities of the country, Medical Sechenov Pre-University became the leader, in the field of medicine, in the number of its graduates who successfully entered the university.

Korean National SUNYUNG Exam

High school students in Korea who want to enter university must pass a national test called the SUNYUNG (it is similar to the Unified State Exam in Russia) in Korean, set by the Korean Ministry of Education Quality. Depending on their preferences, students choose nine subjects to take. Korean history is a compulsory exam to pass. Some items can be selected at two different difficulty levels. The test mainly consists of tasks with multiple choice answers. Students who fail the exam or choose a different study profile can retake it.

Exam results are a key criterion for admission to many universities in Korea.

Admission to Korean universities is very difficult because of the competition. The top institutions accept only 2% of the students who passed the SUNYUNG with the highest score.

The Korean government believes that SUNYOUNG is the most objective and socially balanced criterion for admission, and seeks to increase the use of test results for university admission. But this exam has one big problem – it is almost impossible to prepare for it due to the lack of a collection of standard tasks. In South Korea, students do not have the opportunity to simulate a situation similar to the exam, and therefore there is no opportunity to come to the exam confident in their abilities, and this is one of the reasons why it is very difficult to study and pass exams in this country. Moreover, due to the lack of this opportunity – the solution of trial versions – parents hire their children tutors to increase the amount of knowledge that may be useful for the exam. However, not every family can afford to hire a tutor, thus it is obvious that SUNYOUNG is socially unbalanced.

According to research and interviews with teachers at Hagwong School, high school students in South Korea are less likely to take chemistry and tend to remove this subject from their curriculum. This is due to the fact that all the exam questions are aimed at understanding those chemical processes that are almost not considered in the curriculum. During the test, students need to apply skills and knowledge that they cannot master after completing their studies in high school. In addition, the examinees are given only thirty minutes to complete twenty tasks. Teachers themselves admit that they cannot solve so many tasks in such a short period of time. Such conditions test not the competence of the student in the field of chemistry, but rather his luck on the day of passing the exam.

The purpose of this work is to compare two education systems, South Korean and Russian, in order to find possible advantages in the Korean system and offer their implementation in the domestic one.

Materials and methods of research

To achieve this goal, we used systematic, documentary and structural-logical methods, monitoring and content analysis of scientific articles in periodicals, statistical reports of Statistics Korea.

We also visited exhibitions dedicated to foreign education and interviewed Korean teachers from Seoul National University.

Results and discussion

Having analyzed the experience of South Korea and of the Russian Federation in the field of medical education, we see that, despite the great difference in mentality and cultural traits, there are certain features and principals in Korean system of medical education than can be implemented by medical universities and chemical and biological classes in Russia:

1. Educational principles in Korea take into account the characteristics of each student and give a degree of freedom that will strengthen responsibility and self-motivation. Students will draw on their own strengths and weaknesses to help them become independent thinkers through self-study. Emphasis is placed on the development of self-discipline. Courses in the social sciences and humanities are being expanded to lay a solid foundation for ethical principles.
2. Less strict systematization of programs in higher education institutions. Each student is offered a choice of subjects to study, depending on the chosen specialty, which makes it possible to choose interesting and necessary subjects for building a career in the future;
3. The teacher is always ready to listen to the student, to talk to him, without showing his superiority. The professorship try to be as simple and close to students as possible;
4. Grading is not based on the material that the student can reproduce after the lecture, but on the amount of what he can apply in real life. There are final and intermediate exams in theory, but the main emphasis is on grades for practice [2].
5. The PBL method (Project Based Learning and Problem Based Learning, that is, project-based and problem-based learning).
6. Some Russian universities use this technology, but there are differences between domestic problem-based learning and PBL. PBL consists in a special organization of the educational process, where the main thing is to develop the ability of independent learning and a creative approach to solving problems, while the solution of the problem itself is secondary. This method is the closest to the real working conditions of future specialists. Universities which practice this training do not refuse classical lectures and seminars. Without knowledge of theory, critical and creative thinking will not produce results [1].

Conclusions:

1. A profound and thorough analysis of the information about the methods of pre-university education in the two countries showed that in both cases there are advantages which can be adopted from each other, and disadvantages which can be eliminated.

2. Despite the value of Korean developments in the field of medical education, many of them are either not used at all, or are implemented in an insufficient volume at present.
3. A comprehensive study of Korean educational methods promotes finding principles that might help improve the system of pre-university education in Russia.

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