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THE CONNECTION BETWEEN MATHEMATICS AND MEDICINE

Janxojaev Asqar Ayxoja uli
3 years students, Undergraduate degree
Karakalpak State University named after Berdakh
(Nukus, Republic of Karakalpakstan)
+998996261053
ajanxojaev@gmail.com
Valieva Aynura Irshat qizi
3 years students, Undergraduate degree
Nukus State Pedagogical Institute named after Azhiniyaz
(Nukus, Republic of Karakalpakstan)
Azizova Hurliman Sadratdin qizi
3 years students, Undergraduate degree
Nukus State Pedagogical Institute named after Azhiniyaz
(Nukus, Republic of Karakalpakstan)
Ibadullaeva Tazagu'l Jaqsiliq qizi
3 years students, Undergraduate degree
Nukus State Pedagogical Institute named after Azhiniyaz
(Nukus, Republic of Karakalpakstan)

Abstract: this article is about the generalization of mathematics and medicine
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Mathematics is the queen of all processes occurring in human life. Every day we apply mathematics in everyday life and professional life. It would seem, at first glance, how can mathematics be applied in medicine? In fact, it is impossible to imagine modern medicine without various technologies that need mathematical calculations.

The outstanding Italian physicist and astronomer Galileo Galilei said that "the book of nature is written in the language of mathematics." Almost two hundred years later, the German philosopher Immanuel Kant argued, "There is as much truth in every science as there is mathematics in it." And finally, one hundred and fifty years later, the German mathematician and logician David Hilbert declared, "Mathematics is the basis of all exact natural science."

Where, after all, can mathematics be applied in medicine? Why do medical workers need mathematics? These questions were asked by every person connected with medicine. Especially the students of the initial courses of medical universities.

Will a cardiologist be able to correctly and accurately decipher the simplest cardiogram of a patient in order to establish a diagnosis? And use a CT scanner? Nowadays it is impossible to imagine modern medicine without the use of mathematical technologies.

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Any medical worker will not lie by saying that more than once during work he remembered and used the multiplication table or the rules of rational numbers. Despite this, the application of mathematics in medicine is questioned.

Mathematical models and methods have found an equally extensive place in medicine, they contribute to the development of modern medicine, the emergence of more effective methods of treatment, the purpose of which is to improve the quality of medical care. More and more, not only mathematical technologies are being introduced into medicine, but also mathematical modeling and various modern systems that allow expanding treatment methods and diagnostics of various diseases, which in turn improves the quality of treatment every year.

Another significant proof of the use of mathematics in medicine is mathematical statistics-that is, the study of demographic indicators that are directly related to medicine. The very first statistician Adolphe Quetelet from Belgium made interesting conclusions on a medical example: "Two professors made a curious observation about the pulse rate — they noticed that there is a relationship between growth and the number of pulses. Age can affect the pulse only by changing the growth, which in this case plays the role of a regulatory element. Thus, the number of pulse beats is inversely proportional to the square root of growth. Taking the average person's height to be 1.684 m, they put the number of pulses equal to 70. With this data, you can calculate the number of pulses in a person of any height.

The medical statistics themselves, again, are primarily aimed at improving the quality of medical care to the population, this is directly related to a decrease in morbidity, maternal and infant mortality, as well as an increase in average life expectancy. Everything that is done in medical statistics is aimed at solving these important tasks.

Gone are the days when the use of statistical methods in medicine and biology was questioned. Statistical approaches are the basis of modern scientific search, without which knowledge in many fields of science and technology is impossible. It is also impossible in the field of medicine.

Modern medical technology makes it possible to achieve tremendous success in diagnosis and treatment. Specialists, medical engineers, use methods of physical and mathematical research in modern equipment. No modern medical device is now complete without a computing complex, which make it possible, when working together with telemedicine, to transmit various medical data over unimaginable distances. Which also contributes to the development of medicine.

Mathematics plays an important role in all branches of medicine. For example, specialized programs calculate visual acuity with maximum accuracy, after which there is an individual selection of glasses for the patient.

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Here is another equally common example — from the day of birth of every person, whether he wants it or not, in any case, mathematics pursues: the number and time of birth, the initial weight and height that accompany him all his life. The child has just appeared, and the first numbers in his life are already sounding: date of birth, height, weight. How much should a child weigh at a certain height, what should be the pressure, what diet should be used?

Mathematics will also be applied in the dosage and administration of medicines to the patient. For example, when a person passes any tests. Based on the results, specialists calculate the necessary dose for the drug using formulas. Entering the results into a table and comparing them with ready-made tables is all the application of mathematics. Would a medical professional be able to carry out all these manipulations without knowledge of mathematics?

Absolutely any modern areas of medicine cannot do without technology. It is also natural, as without mathematical calculations, and a medical professional who does not know how to use these calculations will not be able to diagnose the patient, and, consequently, to establish treatment. This once again explains why students of medical institutions seem to study "unnecessary" mathematics and physics.

In conclusion, I would like to say that mathematics and medicine are integral sciences from each other. A component part of which is included in all life processes. Any development in medical science is based only on discoveries in the field of mathematics, these are mathematical statistics, probability theory, analysis of chances and risks, survival analysis. Modern medicine will not take place as a science without it.

A doctor who has not paid due attention to the simple basics of mathematics cannot perform his work competently and qualitatively, on which the life of his patients depends..

References

1. Petrov I.B. Matematicheskoe modelirovanie v medicine i biologii na osnove modeley mexaniki sploshnyx sred // TRUDY MFTI, 2009, Tom 1, №1

Kotin V.V., Ershov Yu.A. Modelirovanie ximicheskogo upravleniya rostom kletochnyx populyaciy. (Tutorial). Publishing house of MSTU im. N.E. Bauman, M., 2002.