STATISTICAL AND EVALUATION METHODS OF INFORMATION PROCESSING IN MEDICINE

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Annotatsiya. *Tibbiyot sohasida ma'lumotlar doimiy ravishda yig'iladi va ular kasalliklarni aniqlash, davolash samaradorligini baholash hamda sog'liqni saqlash tizimini yaxshilashda muhim rol o'ynaydi. Ushbu ma'lumotlarni faqat yig'ish yetarli emas, ularni tizimli ravishda statistik usullar yordamida qayta ishlash va tahlil qilish zarur. Statistik tahlil natijalari klinik tadqiqotlarda ishonchli va ilmiy asoslangan qarorlar qabul qilishga, bemorlarning individual va guruh bo'yicha sog'liq holatini baholashga imkon beradi.*

Kalit so'zlar. *Tibbiyot, statistik tahlil, ma'lumotlarni qayta ishlash, klinik tadqiqot, epidemiologiya, sog'liqni saqlash, ma'lumotlar bazasi, sog'liqni baholash, ilmiy tadqiqot metodlari.*

Annotation. *In the medical field, data is constantly collected and plays an important role in diagnosing diseases, assessing the effectiveness of treatment, and improving the healthcare system. It is not enough to simply collect this data; it is necessary to systematically process and analyze it using statistical methods. The results of statistical analysis allow us to make reliable and scientifically sound decisions in clinical research, assess the health status of patients individually and in groups.*

Keywords. *Medicine, statistical analysis, data processing, clinical research, epidemiology, healthcare, database, health assessment, scientific research methods.*

Аннотация. *В медицинской сфере постоянно собираются данные, которые играют важную роль в диагностике заболеваний, оценке эффективности лечения и совершенствовании системы здравоохранения. Недостаточно просто собирать эти данные; необходимо систематически обрабатывать и анализировать их с использованием статистических методов. Результаты статистического анализа позволяют принимать надежные и научно обоснованные решения в клинических исследованиях, оценивать состояние здоровья пациентов индивидуально и в группах.*

Ключевые слова: *медицина, статистический анализ, обработка данных, клинические исследования, эпидемиология, здравоохранение, база данных, оценка состояния здоровья, методы научных исследований.*

The volume and variety of data in the medical field are constantly increasing. Patient health status, diagnostic results, laboratory indicators, treatment methods, preventive measures and epidemiological data are all important resources for medical practice and research. The process of collecting this data does not produce results in itself; they can be transformed into valid and reliable information through systematic processing, analysis and statistical evaluation.

The article examines in detail the main areas of data collection, classification, processing and evaluation using statistical methods in medicine, as well as their application in clinical practice and epidemiological studies. This approach allows us to improve the quality of healthcare, develop strategies for early detection of diseases, and develop effective treatment strategies.

Statistical methods are of great importance in medical research in several ways. First of all, they allow you to compare the health status of groups of patients, determine the effectiveness of treatment and monitor trends in the spread of diseases. Also, the results of statistical analysis serve as a key tool in making clinical decisions, identifying risk factors, optimizing treatment protocols and developing the healthcare system.

Today, in the medical field, the creation of databases and their processing using statistical methods has become an integral part of scientific research and

clinical practice. Therefore, the correct collection, classification, analysis of data and the connection of results with medical significance are important factors in effective health care and disease prevention.

Data collection and classification. In medicine, data is obtained from various sources: patient health status, diagnostic results, laboratory indicators, drug use and epidemiological studies. Systematic collection and classification of this data is necessary to ensure their quality. Data are stored in electronic digital databases, which subsequently create convenient opportunities for statistical analysis and scientific research. If the data is correctly classified and standardized, the results will be reliable and easy to analyze.

Statistical methods. Statistical analysis is an important tool in medicine for identifying relationships between data and evaluating research results.

• Descriptive statistics: used to summarize and describe data. This method includes indicators such as mean, median, variance, standard deviation. Descriptive statistics are used to present large amounts of data in a clear and simple form.

• Inferential statistics: Methods such as t-test, ANOVA, χ^2-test, and regression analysis are used to identify relationships and differences between data. These methods allow for generalization of research results and their clinical relevance.

• Epidemiological methods: Used to identify trends in disease prevalence, risk factors, and population-level patterns. These methods are important in developing health strategies.

Data evaluation. Statistical analysis results are not sufficient in the form of numbers alone; they need to be visualized and interpreted. Using diagrams, graphs, and tables, data can be understood and medically meaningful conclusions can be drawn. The results can be analyzed in a clinical context and used to improve treatment or prevention strategies.

Application in clinical research. Statistical analysis is widely used in medicine to perform the following tasks:

• Evaluating the effectiveness of new treatment methods and comparing them with existing protocols.

• Analyzing the health status of patient groups and developing individual treatment strategies.

• Disease prevention, optimizing health programs and effective use of medical resources.

• Identifying risk factors in epidemiological studies, monitoring the spread of diseases and formulating health policies.

The results obtained using statistical methods allow for clinical decision-making, the creation of new treatment methods based on scientific research, and ensuring patient safety.

In conclusion, in medicine, data processing and evaluation using statistical methods is of great importance in clinical practice and scientific research. This process allows for improving patient health, early detection of diseases, increasing the effectiveness of treatment, and improving health strategies. While descriptive statistical methods present data in a systematic and understandable form, inferential statistics help to identify relationships, differences, and the reliability of treatment outcomes. Epidemiological analysis also helps to track the spread of diseases and identify risk factors, which allows for effective planning of preventive measures and health programs. In conclusion, in medicine, the processing and evaluation of data using statistical methods is of great importance in clinical practice and scientific research. This process allows for the improvement of patient health, early detection of diseases, increased treatment effectiveness, and improved health care strategies. While descriptive statistical methods bring data into a systematic and understandable form, inferential statistics helps to determine the relationships, differences, and reliability of treatment outcomes.

Epidemiological analysis also helps to monitor the spread of diseases and identify risk factors, which allows for the effective planning of preventive measures and health care programs. Correct interpretation of the results of statistical analysis and their adaptation to the clinical context improves the quality of medical practice,

strengthens the decision-making process with a scientific basis. At the same time, statistical methods serve as a key tool in clinical research for testing new treatments, comparing patient groups, and optimizing the health care system.

In general, statistical analysis is an integral part of making scientifically sound decisions in medicine and improving patient well-being.

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