JSC «Astana Medical University» Department of «Basic scientific methods»

METHODS FOR ASSESSING THE RELIABILITY OF THE RESULTS OF A STATISTICAL STUDY

Prepared by: Tolegen Aiken Group : 203 GM

- When calculating indicators, not all the general population is often used, but only some part of it (for example, in a selective study). It is necessary to evaluate the reliability of the results of the study. The measure of the reliability of the indicator is its error - the error of representativeness (representativeness)
- The error shows how much the result obtained in a selective study differs from the result that could be obtained by a continuous examination of the entire population.

Equipment of the lesson.

- Multimedia projector
- A laptop
- Visual material in the form of a multimedia presentation
- Personal Computer

- Taking into account that doctors, as a rule, carry out researches on selective sets, the theory of statistics allows using the mathematical apparatus (formulas) to transfer data from selective research to the general population.
- In this case, the doctor should be able not only to use the mathematical formula, but draw a conclusion, corresponding to each method of assessing the reliability of the data.

 Applying the method of assessing the reliability of the results of a study the researcher must be able to choose the correct method of this method.

Among the methods for assessing reliability



Nonparametric methods

 Parametric methods for assessing reliability are called -the application of which requires a compulsory knowledge of the law of distribution of the studied features in the aggregate and the calculation of their basic parameters.

 Nonparametric methods for assessing reliability are the application of which does not require knowledge of the law of distribution of the studied characteristics in the aggregate and the calculation of their basic parameters.

- In the final result, a certain numerical value is calculated, which is compared with the tabulated threshold values. The reliability criterion will be the result of comparing the obtained value and the tabulated value for a given number of observations (or degrees of freedom) and for a given level of error-free forecast.
- The average error in estimating the probability by the relative frequency found from the sample is defined as:

$$\mu = \sqrt{\frac{\omega(1-\omega)}{n}}.$$

 The average error in the mathematical expectation is determined by the formula:



where σ is the standard deviation; n is the number of observations.

 With the number of observations less than 30, the mathematical expectation error and the probability found by the sample are determined by the formulas:

$$\mu = \frac{\sigma}{\sqrt{n-1}} \quad \varkappa \quad \mu = \sqrt{\frac{\omega(1-\omega)}{n-1}}.$$

Typical errors allowed by researchers in applying the method of assessing the reliability of the difference in the results of the study.

 In assessing the reliability of the difference in the results of the study using the t criterion, it is often concluded that the results of the study are reliable (or unreliable). In fact, this method allows us to judge only the reliability (materiality) or randomness of the differences between the results of the study. With the obtained value of the criterion t < 2, it is often concluded that it is necessary to increase the number of observations. If the sample sets are representative, then one can not conclude that there is a need to increase the number of observations; in this case, the value of the criterion t <2indicates a coincidence, the unreliability of the difference between the two compared results of the study.