Universidad Zaragoza

Academic Year/course: 2023/24

68402 - Biostatistics. Epidemiology

Syllabus Information

Academic year: 2023/24
Subject: 68402 - Biostatistics. Epidemiology
Faculty / School: 104 - Facultad de Medicina
Degree: 530 - Master's in Introduction to Medical Research
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Compulsory
Module:

1. General information

The need to base the care provided to people, applying the existing scientific evidence, both on the diagnostic and therapeutic processes, as well as on prevention and health promotion activities, requires a methodological training of professionals that allows them to apply the scientific method to daily practice.

This subject will help to achieve several SDGs as it provides the necessary tools to carry out research projects, develop a professional critical spirit and assess the interventions carried out(goal 4: Quality Education), optimize the information obtained from scientific articles and use scientific evidence as a useful tool for decision-making in professional practice(SDG3: Health and Well-being, SDG10: Reducing inequalities).

2. Learning results

To define the context and variables involved in a research design.

-To use the correct statistical test for each case according to the type of variable to be tested.

-To build multivariate models that reflect the importance of each independent variable with respect to the dependent variable under study, as well as the detection of processes such as interaction and/or confusion between independent variables, in case they exist.

-To identify and interpret the different types of epidemiological designs.

-To demonstrate basic skills for the construction, calculation, analysis and interpretation of epidemiological indicators.

-To identify the different sources of error and biases that reduce the accuracy, validity and reliability of epidemiological studies. To analyse such sources in the design, measurement and analysis of the results.

-To critically analyse the results of research in health sciences.

-To apply concepts, principles, theories or models related to their area of study to new or unfamiliar environments.

-To generate ideas and initiate research projects

3. Syllabus

It consists of seven theoretical-practical topics and a workshop:

-Biostatistics:

Information gathering. Sampling and descriptive statistics.

Hypothesis Contrast (C.H) for two and more samples.

Measures of association: correlation and regression. Contingency tables

Survival analysis.

-Epidemiology:

Introduction to epidemiology. Epidemiological measurement. Study design. Descriptive epidemiology.

Analytical epidemiology: observational designs. Experimental designs.

Study of cause-effect association: causal models. Evidence-based medicine.

Critical reading of a scientific article.

4. Academic activities

1. The subject is mainly practical and is developed in **theoretical-practical classes**. Theoretical concepts are presented and then the students, guided by the teacher, develop a practical case. For the biostatistics topics, they will use a statistical package, comment and interpret the results.

2. Workshop on critical reading of a scientific article. The assimilation and application of the aforementioned concepts is emphasized by the critical review of a scientific article in a work group.

3. Group and individual tutoring at the student's request.

All information is available in the ADD (*Anillo Digital Docente*).

5. Assessment system

1. Participation (30%). Attendance, attitude and student participation in the solving of cases are assessed. Weighting: non-attendance/participation=0; justified non-attendance/participation=5; attendance/participation=10)

2. Critical reading of a scientific article in groups (20%). After the critical reading workshop there will be a time for the different groups to do an oral presentation of the activity.

If, for justified reasons, it is not possible to attend the critical reading session, this activity must be done in a non-presential way and delivered in video format, on the day indicated in the subject introduction.

3. Solving a biostatistics problem in groups of 5 (20%).

Based on a database available in the ADD, each group will have to solve a series of questions related to the practical contents of the classroom sessions.

The activity will be delivered in pdf format by e-mail or by ADD. The deadline is the day of the final assessment.

4. Final objective test (30%) Test questions, each with four possible answers and only one valid answer.