INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Epidemiology and Biostatistics			Field of study	Health Sciences						
Bachelor in	Physiotherapy			School	School of Health						
Academic Year	2023/2024	Year of study	1	Level	1-1	ECTS credits	4.0				
Type	Semestral	Semester	1	Code	9504-770-1103-00-23						
Workload (hours)	108	Contact hours	T 15	TP -	PL 30	TC -	S -	E -	OT 20	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Alcina Maria Almeida Rodrigues Nunes, Vitor Manuel Teixeira Machado

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand the role of epidemiology as a set of methods that aim to know the determinants of health and disease within specific populations
2. Describe the design of epidemiologic studies foreseeing their application, their strengths, and their limitations
3. Estimate and read measures of occurrence of disease, as well as, the measures of association and measures of impact
4. Understand the approach for the analysis of data from surveillance systems
5. Know basic statistical methods applied to univariate or bivariate data analysis
6. Manage statistical software for data analysis

Prerequisites

Before the course unit the learner is expected to be able to:
Not applicable

Course contents

Epidemiology: concepts and objectives; Steps of the epidemiologic method; Demographic transition, epidemiologic transition; Measures of disease frequency and mortality; Standardization of rates; Epidemiologic studies type and limitations; Epidemiologic surveillance. Descriptive statistics; Statistical inference. Use of statistical programs for data analysis.

Course contents (extended version)

1. Epidemiology: concepts and objectives
2. Steps in the epidemiological method
3. Demographic transition, epidemiological transition
4. Measures of disease frequency and mortality
   - Health indicators
   - Sources of health information
5. Standardization of rates
6. Epidemiological studies: type and limitations
   - Inference and causality
   - Measures of association and impact
   - Confounding and interaction
7. Epidemiological surveillance
8. Descriptive statistics
   - Categorical variables: absolute, relative and cumulative frequency
   - Quantitative variables: measures of central tendency and dispersion
   - Graphs and tables for the presentation of results
   - Histogram
9. Statistical inference: concept
   - Confidence intervals for proportions and means
   - Significance tests: Chi-square, Student's t-test, ANOVA, Mann-Whitney, and Kruskal Wallis
   - Analysis of the normality of the distribution
10. Use of statistical programs for data analysis
    - Database construction in Excel and other statistical analysis software
    - Data analysis using statistical analysis software: Jamovi and JASP

Recommended reading

1. Cunha, G., Eiras, M., & Teixeira, N. (2011). Bioestatística e Qualidade na Saúde. LIDEL.
2. Gordis, L. (2010). Epidemiologia. Lusodidacta
3. JacGerstman, B. (2003). Epidemiology Kept Simple. Wiley-Liss.
4. Motulsky, H. (2017). Intuitive Biostatistics: A Nonmathematical Guide to Statistical Thinking (4th ed.). Oxford University Press.
5. Oliveira, A. G. (2014). Bioestatística Descodificada (2ª ed.). LIDEL.

Teaching and learning methods

The unit is taught combining from exhibition classes, interactive classes with application of theoretical knowledge in practical situations and self-learning guided by the teacher. There will be an elaboration of practice sheets to encourage the calculation and interpretation of measures of quantification of disease, association, and impact and to apply the concepts of biostatistics.

Assessment methods

1. Option 1 - (Regular, Student Worker) (Final)
   - Practical Work - 50%
   - Intermediate Written Test - 50%
2. Option 2 - (Regular, Student Worker) (Supplementary, Special)
   - Final Written Exam - 100%

Language of instruction

Portuguese

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Electronic validation

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30-10-2023	14-11-2023	14-11-2023	14-11-2023

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