

O41 The importance of probabilistic health literacyC Santos^{1,3}, C Dias^{2,3}, M Borges^{2,4}¹Department of Mathematics and Physical Sciences, Polytechnic Institute of Beja, Beja, PORTUGAL²School of Technology and Management of Portalegre, Polytechnic Institute of Portalegre, Portalegre, PORTUGAL³Center for Mathematics and its Applications, FCT, New University of Lisbon, PORTUGAL⁴Interdisciplinary Coordination for Research and Innovation (C3i), Portalegre, PORTUGAL**Corresponding author:** C Dias: cpsd@ipportalegre.pt**Introduction**

In health sciences there are numerous scenarios in which decision making is based on probabilistic information, among which is the interpretation of medical diagnostic tests results. Since patient's health is considered unknown, the use of the test intends to reduce the diagnostic uncertainty, through the transition from *a priori* probability (disease prevalence) to a *posteriori* probability, regarding the possible presence of the disease. Considering the test result, the decision-making relies on two conditional probabilities, the positive and negative predictive values (PPV and NPV, respectively) arising from the knowledge of the disease prevalence and the sensitivity and specificity of the test.

Objectives

Conditional probability is a challenge for human intuition, causing, among other misconceptions, the transposed conditional fallacy, expressed in the confusion between sensitivity and PPV and between specificity and the NPV. This fallacy, frequent among (our) students but also among professionals, is extremely important when we consider the consequences of misinterpretation of the probabilities associated with medical diagnostic tests. Since it is imperative to make specific treatment of wrong probabilistic intuitions, we must investigate and identify students' misconceptions to promote corrective teaching strategies.

Methods

To defy students' probabilistic intuition and misconceptions, in health sciences Statistics courses we use diversified tasks. The one we address in this study is adapted from Eddy (1982).

Results

Only two, of the 32 students involved, answered correctly to the PPV calculation. None of the students were able to interpret the false-negative rate. The difficulty in translating the problem statement was widespread.

Conclusions:

Proving the need to reinforce the study of conditioned probabilities, the fallacy of the transposed conditional prevailed, but other misunderstandings in probabilities problems were also identified.