Editorial

Statistical Literacy Isn't Just for Researchers

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Statistical literacy is the ability to interpret data and use it to understand the world, make comparisons and, ultimately, make decisions. It is becoming a necessity for people to possess at least some level of statistical literacy because they are inundated with statistics in everyday life — on the news, in political polling and in advertising, to name just a few examples. In health care, statistical information, from health studies in particular, is often presented to patients in relation to disease risk and incidence, appropriateness of screening tests, survival rates, mortality rates, treatments, and so on. Unfortunately, as explained by German psychologist Gerd Gigerenzer, there exists a phenomenon of "collective statistical illiteracy" whereby "the majority of people do not understand what health statistics mean, or even consistently draw wrong conclusions without noticing."[1] For instance, Gigerenzer has pointed out, "few are aware that higher survival rates with cancer screening do not imply longer life, or that the statement that mammography screening reduces the risk of dying from breast cancer by 20% in fact means that one less woman out of 1,000 will die of breast cancer."[1]

Healthcare providers are also inundated with information that requires statistical literacy, specifically data to support evidence-based patient care decisions. It is essential that providers understand the benefit of diagnostic and treatment options, as well as interpretation of positive and negative test results and false-positive rates.[2] Few studies have investigated healthcare providers' statistical literacy. One study found low statistical literacy among obstetrics-gynecology residents.[3] From their work training gynecologists in risk communication, Gigerenzer et al. reported that only 21% of 160 gynecologists could correctly name the positive predictive value of screening mammography.[4] Wegwarth et al. concluded that "Most primary care physicians mistakenly interpreted improved survival and increased detection with screening as evidence that screening saves lives. Few correctly recognized that only reduced mortality in a randomized trial constitutes evidence of the benefit of screening."[5] A literature search of Google Scholar, PubMed and ERIC found no studies related to statistical literacy in optometry.

The Association of Schools and Colleges of Optometry reports that 20 out of 23 U.S. optometric institutions require a course in statistics for admission into the program.[6] The remaining three institutions strongly recommend a course.[6] However, a basic undergraduate course in statistics does not necessarily give future optometrists the skills needed to be statistically literate. The American Optometric Association designates as an ethical duty of the optometrist "to involve the patient in care and treatment decisions in a meaningful way, with due consideration of the patient's needs, desires, abilities and understanding, while safeguarding the patient's privacy."[7] If patients are to participate in their own care, they need a basic understanding of statistics.

Statistical literacy needs to be a priority for all healthcare providers, optometrists included. As providers, it is our ethical duty to provide patients with the appropriate information for making decisions about their care. As educators, it is our responsibility to provide and reinforce through role-modeling the statistical concepts our students need to interpret and use data as they care for patients.

References

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