Swimming in a Sea of Numbers

Webinars on Statistical Literacy

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What is statistical literacy?

In general, statistical literacy is the ability to critically evaluate statistical material and to appreciate the relevance of statistically-based approaches to all aspects of life.

Medical librarians need:

1. Awareness of types of data and methods of data collection. 2. Understanding of statistical concepts. 3. Ability to analyze, interpret, and evaluate statistical information. 4. Ability to communicate statistical information and understandings.

Our story:

Susan: "Hi Steve. Saw your new statistics book and Children's Mercy Hospital website on statistics. I'm involved in teaching an evidence-based medicine class at UMKC. Do you have any classes that I could attend or audit? By the way, do you have any interest teaching medical statistics for hospital librarians, or statistics for librarian researchers?" Steve: "Hi Susan. Actually, the most commonly used research designs in the medical literature and what they mean to your doctors, could be fun. Let's talk!" Susan: "Hi Rebecca. "Could we post a survey to MCMLA listserv to see whether librarians want to participate in a class on statistics? By the way, could you get us some technology support for a class?" Rebecca: "Hi Susan and Steve, 21 librarians responded to the survey. NNLM/MCR will help us with the technology. Why don't you submit this to the Medical Library Association for continuing education credit?" Chorus: "Done! Excellent!"

We designed the course and set up a listserv

for communication, questions, and discussion threads. 1. The readings were selected from free journal articles in PubMed Central or on websites. 2. Steve created a unique class website and provided a class "handout" prior to each webinar. 3. The webinars were monthly for an hour long around the noon hour. 4. Participants could earn 1 Medical Librarian Association continuing education credit per webinar, up to 5 credits.

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Librarians need to know how to interpret research studies that build an evidence base for making informed medical decisions. They need to understand research design, and if a study question, methods, and numbers analysis make sense, and why. Our webinars led to a clearer understanding of statistics used to interpret research.

Before we designed the class, we asked librarians on the MCMLA listserv, "What do you think belongs in a course on interpretation of statistics for medical librarians?" They told us:

1. Help to use evidence-based medicine concepts. 2. Understanding of statistical terms and various ways that differences are interpreted. 3. Statistical concepts relevant to critical appraisal of the medical literature. 4. The most common statistics used to judge and interpret a study and results. 5. Clear understanding/definition of the types of research and their application. In other words, why the statistical method used was appropriate or not for testing the hypothesis. 6. For me, start at the beginning! 7. What the numbers really mean. Confidence interval; crossing one; the power of the study; what to look for to be sure the numbers are real; lots of stuff. I am not very math literate. 8. Illustrations of how statistics can be misinterpreted (or differently interpreted). 9. Basic statistics, ones you are most likely to see in research. Identification of what kinds of stats are most meaningful. Is there a "gold standard"? 10. Interpretation of data-CI, significance of sample size, p-value. 11. Definition of statistical terms; why some things are and aren't statistically significant; the limits of what statistics can show. 12. Why is significance significant? What's the difference between some of the biggies such as chi-square and ANOVA. 13. I struggle with concepts like "relative risk" and "confidence intervals." 14. What to look for to determine whether it is a good study.

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After each webinar,

a survey evaluation was completed. Participants responded to the question, "What was best about the webinar?" In order, the four highest ranking items after each webinar were:
1. The instructor 2. Information gained 3. Demos and hands-on exercises 4. Support materials

After the webinars participants told us what they liked best:

1. A lot of information that is available freely online for continuing study. 2. Instructor highly qualified to teach course and good at teaching via web. 3. Great! Complicated, but great. 4. Hearing explanations & being able to ask questions after reading assigned materials 5. Readings and the explanation by the presenter. 6. I like the presentation style and the easy of attending! 7. Real life examples. Readings ahead of class. 8. Hearing explanations and being able to ask questions after reading assigned materials. 9. Pop quizzes before each section of class to check understanding, and after the instruction to re-check understanding. 10. Instructor uses examples that really explain what he is talking about.

2010 course content is available at:

www.pmean.com/10/StatisticsLibrarians.html
April 7: Show me your proof: Confidence intervals and p-values.
April 21: How bad is it, really? Measures of risk.
May 5: Putting your life in the hands of a coin: Randomized trials.
May 19: It's just what the doctor ordered. Observational studies.
June 2: How it all fits together: Systematic overviews and meta-analysis.

For more information please contact us:

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