Evidence Based Library and Information Practice

Evidence Summary

Ovid MEDLINE Instruction can be Evaluated Using a Validated Search Assessment Tool

A Review of:

Rana, G. K., Bradley, D. R., Hamstra, S. J., Ross, P. T., Schumacher, R. E., Frohna, J. G., & Lypson, M. L. (2011). A validated search assessment tool: Assessing practice-based learning and improvement in a residency program. *Journal of the Medical Library Association, 99*(1), 77-81. doi:10.3163/1536-5050.99.1.013

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Abstract

Objective – To determine the construct validity of a search assessment instrument that is used to evaluate search strategies in Ovid MEDLINE.

Design – Cross-sectional, cohort study.

Setting – The Academic Medical Center of the University of Michigan.

Subjects – All 22 first-year residents in the Department of Pediatrics in 2004 (cohort 1); 10 senior pediatric residents in 2005 (cohort 2); and 9 faculty members who taught evidence based medicine (EBM) and published on EBM topics.

Methods – Two methods were employed to determine whether the University of Michigan MEDLINE Search Assessment Instrument (UMMSA) could show differences between searchers' construction of a MEDLINE search strategy.

The first method tested the search skills of all 22 incoming pediatrics residents (cohort 1) after they received MEDLINE training in 2004, and again upon graduation in 2007. Only 15 of these residents were tested upon graduation; seven were either no longer in the residency program, or had quickly left the institution after graduation. The search test asked study participants to read a clinical scenario, identify the search question in the scenario, and perform an Ovid MEDLINE

search. Two librarians scored the blinded search strategies.

The second method compared the scores of the 22 residents with the scores of ten senior residents (cohort 2) and nine faculty volunteers. Unlike the first cohort, the ten senior residents had not received any MEDLINE training. The faculty members' search strategies were used as the gold standard comparison for scoring the search skills of the two cohorts.

Main Results – The search strategy scores of the 22 first-year residents, who received training, improved from 2004 to 2007 (mean improvement: 51.7 to 78.7; $t(14)=5.43$, $P<0.0001$). The graduation scores were also significantly higher for this first cohort compared to the second cohort, who received no training (median 85.0 vs. 65.0; Wilcoxon chi-square(1)=4.09, $P=0.043$). The graduation scores of the first cohort were similar to those of faculty volunteers (Wilcoxon chi-square(1)=3.82, $P=0.050$) .

Conclusion – According to the authors, "the results of this study provide evidence for the validity of an instrument to evaluate MEDLINE search strategies" (p. 81), since the instrument under investigation was able to measure improvements and differences in the search performances of the study's participants. A validated search assessment instrument can effectively measure improvements in residents' search skills to demonstrate training effectiveness, as well as satisfy practice-based learning competency requirements from the Accreditation Council for Graduate Medical Education.

Commentary

The authors state that they are unaware of any validated search assessment instruments that measure residents' MEDLINE search performances. This study fills a gap in the existing literature by presenting and validating an instrument, the University of Michigan MEDLINE Search Assessment (UMMSA), to evaluate Ovid MEDLINE search strategies. Instructional librarians can use this study to create and validate their own instruments to measure search performance improvement as a result of MEDLINE training.

Proof for the validity of the UMMSA consisted of the following:

1. The instrument was created by expert librarians and provided useful information about searchers' abilities when used;
2. The instrument was piloted in other settings; and
3. The instrument successfully recorded differences in the search performances of clients with different searching expertise.

The UMMSA was modeled on a search assessment instrument developed by Nesbit and Glover in 2002. The authors declared that this instrument "allowed greater objectivity and provided a more efficient means to measure search skills" (p. 78) than the tools they had used in the past. This reviewer would have liked an explanation of how Nesbit and Glover's instrument allowed greater objectivity and efficiency.

The authors also briefly discuss how they used item-total score correlations from the UMMSA, and their judgment as expert searchers, to identify the five most important elements in an effective MEDLINE search strategy. According to the authors, an effective search strategy in MEDLINE should include:

1. all search concepts;
2. medical subject headings;
3. appropriate search limits;
4. Boolean operators for all search concepts; and
5. an efficient search history (strategies should not include too many search sets that are not combined in the final search string)

It is not clear from the article how item-total score correlations from the UMMSA are an appropriate means to identify the critical

elements in a MEDLINE search. A summary of the published literature on the elements required to perform a successful search would have further supported the authors' argument. Further research could confirm the importance of the authors' five critical elements for conducting a successful MEDLINE search. After which, the authors could shorten the search assessment instrument from the eleven search criteria used in the UMMSA tool to only the five critical elements. Investigators could then retest this revised instrument in different populations to establish its construct validity.

References

Nesbit, K., & Glover, J. (2002). *Ovid Medline search strategy scoring sheet.* Rochester, NY: University of Rochester.