Teaching to Search Effectively Using PubMed and Other Search Tools

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We are living in a world, where medical field is advancing rapidly. Many questions arise in the medical field everyday, which are left un-answered "due to lack of skills in formulating questions, crafting effective search strategies, and accessing databases to identify best levels of evidence."¹ For physicians to keep-up with the medical advances, there needs to be a common place to share and review the research being carried out in different fields of medicine and at various places. PubMed is that "common place," where millions of research articles are present and can be reviewed at any time.² This database can be used for many purposes: research, retrieval of information on particular topic or even a definition of a clinical term.³ The information obtained from literature searches in PubMed can have a significant impact on patient care and clinical outcomes. Even though the millions of articles seem like a blessing but searching through them is time-consuming.⁴ For this reason, special training is necessary to ensure the maximum efficiency of the search being carried out. A simple educational intervention can markedly increase search effectiveness in these databases among medical researchers and clinicians.⁵

PubMed: PubMed is a database that was developed by National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) located at the U.S. National Institutes of Health (NIH).⁶ MEDLINE is the largest component of PubMed, the freely accessible online database of biomedical journal citations and abstracts created by the U.S. National Library of Medicine (NLM®). Approximately 5,000 journals published in the United States and from more than 80 other countries have been selected and are currently indexed for MEDLINE. A distinctive feature of MEDLINE is that the records are indexed with NLM’s controlled vocabulary, the Medical Subject Headings (MeSH).⁶

A two-day workshop on medical literature searching was recently conducted by the Department of Medical Education, Shifa College of Medicine, Islamabad. Each workshop had two sessions of 2 hours in an interactive, hands-on, step-by-step tutorials format with written handouts and flash animated videos. The video tutorials guide about the mouse movements was shown on-screen, so that one could know which buttons/links to click during search. These video tutorials are available at PubMed website (http://www.pubmed.com). (Table I).

Three instructors supervised these sessions of total 30 participants, using 22 computer stations in Medical Informatics Laboratory, equipped with high-speed internet connectivity.

Table I: Training done on following flash tutorials.

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<tr>
<th>Training</th>
<th>Link</th>
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<tr>
<td>Combining MeSH terms</td>
<td><a href="http://www.nlm.nih.gov/bsd/viewlet/mesh/combining/mesh2.html">http://www.nlm.nih.gov/bsd/viewlet/mesh/combining/mesh2.html</a></td>
</tr>
<tr>
<td>Send to E-mail</td>
<td><a href="http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/030_210.html">http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/030_210.html</a></td>
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Pre-test and post-test were conducted to assess the effectiveness of these workshops. These tests checked the competency level of MeSH terms, Boolean operators used with MeSH keywords, use of limits and filters, saving clinical queries on clipboard and retrieval of full-text articles. In addition to this, different other literature search web-sites⁷⁻⁸ were also explored including Google Scholar, PakMedi-Net.com, and eTBlast.

The participants were assessed using multiple-choice-questions (MCQ). Understanding of search techniques was identified by these questions. The mean score improved from the pre-workshop mean of 1.9 correct answers out of 5 questions to post-workshop mean of 3.4 correct answers (2-tailed paired t-test p=0.00013). About 86% of participants rated workshop as “Good” or above. Recommendations were to increase practice time, and one-to-one availability of computers.

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A hands-on workshop can improve skills in searching PubMed for medical literature. We recommend more workshops to train clinicians to use PubMed as a tool for practicing evidence-based medicine and to support clinical decision-making.

REFERENCES