

Putting Wikipedia to the Test: A Case Study

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STRUCTURED ABSTRACT

Background

Librarians from the University of Queensland Library, in Australia, initiated a case study to compare traditional electronic clinical resources with medical Wikipedia entries. An objective was to undertake a critique of clinical information electronic sources and to have a presence in the Web 2.0 environment, occupied by many of their students. The results of the study will help guide academics and students on the quality of a range of information resources to support teaching and learning in the medical sciences.

Introduction

A wiki is a technique for collaborative development of documents on the web¹. Volunteers located throughout the world write the Wikipedia collaboratively. It was established in 2001 and has grown rapidly into one of the largest reference Web sites attracting at least 684 million visitors yearly by 2008². Increasingly medical students use Wikipedia for information on medical subjects. The convenience and easy to comprehend articles keep students returning to the Wikipedia to help with their studies. This study addresses the suitability of the Wikipedia as a source for medical students.

Literature Review

A literature search in PubMed and the ISI Web of Knowledge did not find any studies that compared the medical information of a topic on Wikipedia with other electronic resources. A study published in Nature, comparing the accuracy of science entries in Wikipedia with those of the online Encyclopaedia Britannica, found little difference between these resources³. A review of 35 entries for inpatient procedures in Wikipedia found that Wikipedia entries were accurate but had significant omissions and were written at a general level suitable for patients⁴. Studies on medical students' use of information resources or reading habits have noted a growing preference for electronic resources, particularly UpToDate^{5 6 7}. It is argued that wikis are not meant to replace print and electronic resources; they are a means to enhance traditional library collections and services⁸.

Methods

For this case study, we developed a scale to compare entries on conjunctivitis, multiple sclerosis and otitis media in Wikipedia with other resources used by medical students: the free version of eMedicine (<http://www.emedicine.com/>) and two subscription-based resources from AccessMedicine (<http://www.accessmedicine.com/home.aspx>) and UpToDate (<http://www.uptodate.com/home/index.html>). De-identified copies of the entries were created by removing all resource titles so the evaluation by each subject expert was blinded.

The scale was used to rank the accuracy, coverage, concision, currency and suitability of the resources. To evaluate the accessibility and useability of the resources, medical librarians critiqued the access conditions, the ease of finding and navigating the information and the presentation quality.

Results

Based on the opinion of the medical experts, Wikipedia entries were reasonably concise and current but failed to cover key aspects of two of the topics and contained some factual errors. Each reviewer found Wikipedia unsuitable for medical students. Wikipedia was the most accessible resource and the easiest resource in which to find information because the relevant topics were retrieved immediately upon searching. The other resources required the searcher to select from lists of entries.

AccessMedicine was rated as the most suitable resource in terms of content by two of the experts; the third expert was critical of its lack of emphasis on empirical data. The accuracy and coverage of the entries for the three topics in AccessMedicine was very high. Each of the topics had no factual errors and comprehensively covered all areas.

The entries for UpToDate on the topics were found for Multiple Sclerosis and Otitis Media to contain no factual errors. The reviewer judged the Conjunctivitis entry in UpToDate had some minor factual errors. All experts indicated that UpToDate was generally suitable for medical students with some limitations. Only one reviewer indicated eMedicine was generally suitable with some limitations otherwise this resource was rated as unsuitable for medical students. Overall the scoring by the experts for eMedicine was varied.

Discussion

This study has implications for medical students, teachers, publishers and librarians. Medical students are trained to become critical readers and for those who base their learning on Wikipedia sources they will be misinformed. As anyone can edit Wikipedia information students need to be aware of this and use this source cautiously. Medical schools need to provide clear guidelines on the use of Wikipedia for students.

In-text referencing of texts linking to evidence should be a prerequisite of recommended medical textbooks. None of the book chapters evaluated from AccessMedicine contained in-text references

Librarians can take on board many of these findings and be guided in their recommendation of resources. Assessing the quality of resources must be promoted to students, along with continuous education about the information landscape and good research practices. Librarians need to lobby vendors for improvements to the design of electronic resources. Ease and speed of access influence students' choice of information sources and may trump quality.

Study Limitations

Each of the resources evaluated are designed for online usage and given the need to strip the records of identifying data, the hyperlinks and online context were removed from the entries. In the case of UpToDate and eMedicine entries on the topic have multiple entries and selecting suitable topics and merging those is likely to have impacted upon the assessment. In the case of UpToDate the merging of the entries resulted in some duplication of content.

As the involvement of experts involves considerable time on their behalf to evaluate the topics we have only been able to review three topics comparing four resources that are used by our medical students. Content of each resource was evaluated on the scale that was developed in-house and not comprehensively critically appraised.

Further research

It would be worthwhile comparing the content of medical Wikis that have physician authors and invited expert authors only, such as Dr Wiki⁹, Ganfyd¹⁰ and WiserWiki¹¹ with medical subscription resources.

Critical appraisal of traditional resources, such as textbook chapters and the more established online resources would be beneficial to ensure the assessment of these resources was as robust as the journal article appraisal process.

Conclusions

As more online medical school curriculum is developed and shared internationally there is a need to develop higher standards for determining suitable learning resources for medical students. If an Evidence Based Practice approach is to be adopted then the highest forms of evidence and pedagogical material needs to be available to form the basis of learning material for students. Our research indicates that Wikipedia resources were not rated as suitable for students to base their learning upon though this resource is demonstrated to be the most convenient to access. The more established resources, such as textbook chapters were found to also have limitations based on the lack of integrated references. Our study confirms the importance of accessibility and usability which have implications for the design of resource interfaces. Librarians have a leading role with helping students, teachers and clinicians to keep up with new information technologies.

Endnotes

¹ Altmann, U. "Representation of Medical Informatics in the Wikipedia and its Perspectives." *Stud Health Technol Inform* 116, (2005): 755-760.

² "About Wikipedia." <http://en.wikipedia.org/wiki/Wikipedia:About> (accessed April 13 2008).

³ Giles J. "Internet encyclopaedias go head to head." *Nature* 438, (2005): 900-1.

⁴ Devgan L, Powe N, Blakey B, Makary M. "Wiki-Surgery? Internal validity of Wikipedia as a medical and surgical reference." *J Am Coll Surg* 205, (2007): S76-S7.

⁵ DeZee KJ, Durning S, Denton GD. "Effect of electronic versus print format and different reading resources on knowledge acquisition in the third-year medicine clerkship." *Teach Learn Med* 17, (2005): 349-54.

⁶ Leff B, Harper GM. "The reading habits of medicine clerks at one medical school: frequency, usefulness, and difficulties." *Acad Med* 81, (2006): 489-94.

⁷ Peterson MW, Rowat J, Kreiter C, Mandel J. "Medical students' use of information resources: is the digital age dawning?" *Acad Med* 79, (2004): 89-95.

⁸ Barsky E, Giustini D. "Introducing Web 2.0: wikis for health librarians." *JCHLA / JABSC* 28, (2007): 147-150.

⁹ <http://www.askdrwiki.com>

¹⁰ <http://www.ganfyd.org>

¹¹ <http://www.wiserwiki.com/>