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Accuracy of Cancer Information on the Internet: A Comparison of a Wiki with a Professionally Maintained Database

M. S. Rajagopalan
University of Pittsburgh School of Medicine

V. Khanna
Drexel University College of Medicine

M. Stott
Drexel University College of Medicine

Y. Leiter
Bruce and Ruth Rappaport Faculty of Medicine, Technion – Israel Institute of Technology

T. N. Showalter
Thomas Jefferson University and Hospitals

See next page for additional authors

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Authors

M. S. Rajagopalan, V. Khanna, M. Stott, Y. Leiter, T. N. Showalter, A. Dicker, and Y. L. Lawrence

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Rajagopalan, M.S.,¹ Khanna, V.,² Stott, M.,² Leiter, Y.,³ Showalter, T.N.,⁴ Dicker, A.,⁴ Lawrence, Y.L.⁴

¹University of Pittsburgh School of Medicine, Pittsburgh, PA

²Drexel University College of Medicine, Philadelphia, PA

³Bruce and Ruth Rappaport Faculty of Medicine, Technion – Israel Institute of Technology, Haifa, Israel

⁴Department of Radiation Oncology, Thomas Jefferson University and Hospitals, Philadelphia, PA

Background

A Wiki is a website which can be directly, openly edited; Wikipedia, a collaborative encyclopedia, is a well-known example. Due to Wiki's lack of editorial control and formal structure, we hypothesized that the content would be less complete and less accurate than that presented on a formal, peer-reviewed web site. Our goal was to compare the coverage, accuracy, and readability of cancer information from a Wiki (Wikipedia) with a peer-reviewed web site, the patient-oriented National Cancer Institute's Physician Data Query (PDQ) comprehensive cancer database.

Methods

For each of ten cancer types, an appraisal form was created to include content of epidemiology, etiology, symptoms, diagnosis, treatment, and controversial topics in cancer care. Statements were obtained and validated from standard oncology texts. Medically-trained personnel scored PDQ and Wikipedia web pages for accuracy and presentation of controversies. Reliability was assessed using inter-observer variability (correlation coefficient) and test-retest reproducibility (Ebel's algorithm). Readability was calculated from word and sentence length.

Results

Examiners were able to assess web sites rapidly, with a mean of 18 minutes per article. Test-retest reliability was 0.71. Inter-observer variability was 0.53. For both web sites, inaccuracies (as agreed upon by ≥ 2 raters) were rare and comprised $< 2\%$ of information examined. PDQ was significantly more readable than Wikipedia: Flesch-Kincaid grade level 9.6 ± 1.5 vs. 14.1 ± 0.5 ($p < 0.0001$). There was no difference in depth of coverage between PDQ and Wikipedia (29.9 ± 8.3 , 34.2 ± 14.0 respectively; max. possible score 72). Controversial aspects of cancer care were relatively poorly discussed in both resources (2.9 ± 2.8 and 6.1 ± 6.3 for PDQ and Wikipedia respectively [NS]; max. possible score 18). A planned sub-analysis comparing common to uncommon cancers demonstrated no difference between the two for either resource.

Conclusion

Although the Wiki resource had similar accuracy and depth to the professionally edited database, it was significantly less readable. Further research is required to assess how this influences patients' understanding and retention.