



*Evidence Summary*

**Low-Level Evidence Suggests that Perceived Ability to Evaluate and Trust Online Health Information is Associated with Low Health Literacy**

**A Review of:**

Diviani, N., van den Putte, B., Giani, S., & van Weert, J. C. (2015). Low health literacy and evaluation of online health information: A systematic review of the literature. *Journal of Medical Internet Research*, 17(5), e112. <http://dx.doi.org/10.2196/jmir.4018>

**Reviewed by:**

Lindsay Alcock  
Head, Health Sciences Library  
Memorial University of Newfoundland  
St. John's, Newfoundland, Canada  
Email: [lalcock@mun.ca](mailto:lalcock@mun.ca)

**Received:** 28 Feb. 2016

**Accepted:** 15 Apr. 2016

© 2016 Alcock. This is an Open Access article distributed under the terms of the Creative Commons-Attribution-Noncommercial-Share Alike License 4.0 International (<http://creativecommons.org/licenses/by-nc-sa/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly attributed, not used for commercial purposes, and, if transformed, the resulting work is redistributed under the same or similar license to this one.

---

**Abstract**

**Objective** – To review, based on research evidence, the correlation between low health literacy and four outcomes of interest: (1) the ability to evaluate online health information based on (2) perceived reliability and accuracy, (3) trust in the Internet as an information source, and (4) the application of established evaluation criteria.

**Design** – Systematic review and narrative synthesis.

**Setting** –MEDLINE, PsycInfo, Web of Science, CINAHL, and Communication and Mass-media Complete as well as articles discovered through the snowball method.

**Subjects** – 38 studies identified through a systematic literature search.

**Methods** – An exhaustive list of potential articles was gathered through searching five online databases and Google Scholar, and hand searching of references. Inclusion and exclusion criteria were applied in a two-phase screening process in which two researchers participated to address reliability. Data, including study characteristics and metadata, predictors, assessment methods, and outcomes, were extracted from relevant studies, and then synthesized narratively.

**Main Results** – Following duplication removal 13,632 records were retrieved, 254 of which were identified for full-text assessment. Thirty-eight studies met the eligibility criteria. All

studies were non-experimental and therefore graded as a low level of evidence; 35 were cross-sectional designs, 1 a focus group, and 2 were observational studies. Studies varied widely in population definition and sample size and were published between 2001 and 2013, primarily in North America.

Overall, a positive association was identified between health literacy and outcomes related to the ability to evaluate or trust Internet health information, while findings were inconsistent related to perceived quality of information and the application of evaluative criteria. Four studies examined the impact of health literacy levels on one or more of the outcomes of interest.

The most prevalent outcome measure studied was trust in online health information, and the least prevalent was the use of evaluative criteria. The ability to trust online health information was assessed primarily through self-reporting, half of which utilized the eHealth Literacy scale, the majority of which indicated a positive correlation between education level or low health literacy and the perceived or actual ability to evaluate online health information.

No studies on perceived information quality were found to utilize health literacy as an indicator. A positive association between educational level and trust in health information on the Internet was reported in ten studies, while two articles noted a similar correlation based on proxies for health literacy, including English language proficiency and comprehension comfort. In terms of the use of evaluation criteria, only one study focused on health literacy, indicating that those with low health literacy evaluate online health information based on search result placement, celebrity endorsement, image quality, and site authorship, and that they trust university researchers more than government or religious authorities to provide health information.

No association was shown between readability or physician-provided online information and evaluation criteria while one study demonstrated that study participants with

higher education tended to check author credentials more often when evaluating a website.

**Conclusion** – Effective and informed evaluation of online health information is impacted by low health literacy.

### Commentary

Given the lack of a standard definition of low health literacy, the numerous markers for literacy levels and the multiple indicators related to Internet evaluation, the authors have effectively synthesized the available research in this systematic review. There is no indication that the search strategy was peer reviewed using PRESS, and it is questionable whether or not term/concept selection such as telemedicine and racial/ethnic group was appropriate. The authors note, however, that the search strategies were deliberately broadened to include all potential proxies and that irrelevant articles were eliminated during the screening phases. The article screening process is not standard for a systematic review and therefore reliability is somewhat limited. One reviewer performed title/abstract and full-text screening. A second reviewer assessed 10% of the abstracts and all full text articles meeting eligibility criteria. Disagreements were resolved in consensus meetings rather than by a third reviewer.

Recognizing that information evaluation is multi-faceted, the authors identified four components, or research questions, to investigate. The authors demonstrated informed consideration of low health literacy indicators by including proxies (e.g., general literacy, reading, or educational level) in the literature searches and inclusion/exclusion criteria thus ensuring comprehensiveness. While this approach strengthened the synthesis through the inclusion of closely related research it also served to decrease the homogeneity of the eligible studies. The inclusion of subgroup analysis from larger studies also reduces the strength of the review and external validity. That all included studies were non-interventional lowers the level of evidence and resulted in a narrative review,

however that is logical given the subject area. The authors acknowledge these limitations of the study as well as the fact that sufficient data was not available to compare across different levels of health literacy and that self-reporting has inherent biases.

Due to the heterogeneity of the studies, a synthesis of quantitative results was not possible. The results were therefore presented narratively and enhanced with five detailed tables identifying the study type, population description, sample size, health literacy predictor/proxy, measurement, and results based on each outcome of interest.

The benefits of this systematic review lie primarily in its identification of gaps in the literature and limitations of current research on this topic to provide solid evidence correlating literacy levels with online health information evaluation. Suggestions for further research, as identified by the authors, aim to tie together the body of knowledge of information seeking behaviour, appropriate evaluation criteria, and the related impact of literacy levels thus allowing health information providers to best meet the needs of all health consumers.