Evidence Based Library and Information Practice

Lexicomp Provides More Comprehensive Drug Information than Wikipedia in Small Sample Comparison

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Evidence Summary

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A Review of:
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Abstract

Objective – To compare the content veracity and comprehensiveness of Lexicomp and Wikipedia with respect to drug information.

Design – Comparative study.

Subjects – Lexicomp and Wikipedia.

Methods – Five of the six most commonly prescribed medications in Canada were selected for content comparison in both Lexicomp and Wikipedia (levothyroxine, atorvastatin, pantoprazole, acetylsalicylic acid, and metformin). Three categories compared included dose and instructions, uses, and adverse effects or warnings; sixteen subcategories were identified to provide further comparative detail. Five outcomes were assessed using a rating scale to identify the presence or absence of each subcategory for each drug entry: present in neither source, present in Wikipedia but not Lexicomp, present in Lexicomp but not in Wikipedia, present in both without discrepancies, and present in both with discrepancies. The only subcategory meeting the criteria for "present in both with discrepancies" for all five medications was adverse reactions, indicating

that the information in each resource differed. A "fact-checking literature search" in MEDLINE and EMBASE as well as searches in the USFDA Prescribing Information (supplemental index) (FDA PIs) and the FDA Adverse Events Reporting Systems (FDAERS) were used to determine the veracity of the discrepancies. Quantitative assessment was used to determine how comprehensive the entries were in terms of the number of times in which each resource provided subcategory information. Adverse reaction information was expressed as a percentage based on the number of adverse reactions identified in the sources.

Main Results – Overall, Lexicomp was shown to provide more comprehensive information than Wikipedia. In the subheading analysis, there was no instance in which Wikipedia contained information while Lexicomp did not, while in over half of instances Lexicomp only contained the information. 18% of subheading information was found in both with discrepancies and 20% was found in both without discrepancies. Only 10% of instances were not present in Lexicomp or Wikipedia. Detailed dosing information was consistently present in Lexicomp for all five medications while only general dosage information was present in just two instances in Wikipedia.

Of all the subcategory comparisons, adverse reactions was the only one identified as "present with discrepancies" for all medications being compared; MEDLINE, EMBASE, FDA PIs and the FAERS dashboard searches were performed for a total of 309 discrepant adverse reactions. 63% (191/302) of the adverse reactions listed in Lexicomp were supported by the literature retrieved from MEDLINE and EMBASE compared to 100% (7/7) of those listed in Wikipedia. Of the Lexicomp adverse reactions unsupported by the peer-reviewed literature, 17% were supported from information found in FDA PIs and 90% supported from information found in the FAERS dashboard. A "substantial proportion" of adverse events listed in Lexicomp were not supported in any retrieved literature.

Conclusion – Based on the comparative criteria, drug information in Lexicomp for the five medications was found to be more comprehensive than Wikipedia. Adverse effects listed in Lexicomp did not always have corresponding support in the published peer-reviewed literature.

Commentary

The authors note that comparing information for five medications in two resources limits the scope of the study making it less generalizable. Therefore, it is difficult to deduct that Lexicomp is more comprehensive overall or that Wikipedia is less exhaustive in its provision of drug information from this study alone. That said, the methodology is structured and straight-forward and the study reproducible thus providing a mechanism for further research with a more extensive scope. This study adds to the significant body of literature studying the currency, accuracy, and comprehensiveness of medical information found in Wikipedia compared to other resources including textbooks (Kräenbring et al., 2014), Micromedex (Reilly, Jackson, Berger, & Candelario, 2016) and medication guides (Candelario, Vazquez, Jackson, & Reilly, 2017).

The additional step of fact-checking listed adverse reactions with peer-reviewed literature and FDA information added weight to the study while also presenting an interesting avenue for additional research. That a high percentage of adverse reactions were not supported by the literature would be of interest to those studying publication and reporting bias. It highlights the challenge of accuracy and transparency regarding adverse event knowledge transfer. The authors contacted Lexicomp regarding their process for adding adverse effects and were told that "they are working to provide better referencing for adverse drug reactions." A follow-up study would determine the impact of such improvements.

While the process for fact-checking was described, it would have been helpful for the authors to include, as an appendix, the literature search strategy and criteria for

eligibility. A limitation of the study, which the authors note, is that screening and fact-checking was done by one person rather than two.

For health information specialists, the results of this study are not especially surprising and serve as a reminder that drug information resources, regardless of the source, require questioning in terms of the sources of the content and exhaustiveness. To recognize the limitations of a source such as Lexicomp allows librarians to more effectively utilize and transfer knowledge. But what does it mean for consumers, clinicians, or students studying in the health professions? Results can be used to further inform consumers on the importance, or dare I say necessity, of approaching Wikipedia with a healthy skepticism while introducing alternatives. For healthcare clinicians and students, the results demonstrate that even licensed resources need to be critically appraised and called to account.

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