Assessing the Quality of Anti-Cancer Drug Interaction Websites – A Pilot Study

Raaj. S.¹; Yap. K.Y-L.² and Chan. A.³

Department of Pharmacy, Faculty of Science, National University of Singapore
10 Kent Ridge Road, Singapore 117546

ABSTRACT

Cancer patients undergoing chemotherapy are particularly susceptible to drug interactions. Reports indicate that healthcare professionals utilize online resources to identify these drug interactions. However, the quality of web based health information has been identified to be of varying standards. As a solution to this problem, several assessment tools have been developed to evaluate the quality of online health information although none are specifically catered for assessing anti-cancer drug (ACD) interaction information. As such, a tool for the specific assessment of online ACD interaction information has been formulated. Comprising of 26 questions, this tool can also be used for general evaluation of drug interaction websites. The maximum achievable score for this tool is 50 points. Descriptive statistics of results obtained from pilot testing the tool has been included in this report.

INTRODUCTION

The narrow therapeutic ranges and inherently toxicity of anti-cancer drugs, (ACDs) make chemotherapy patients particularly susceptible to drug interactions (Scripture and Figg, 2006). Healthcare professionals have to keep themselves informed of the current developments regarding these drugs. The internet can be useful for this purpose as it provides an attractive venue for quick information dissemination. However, concerns exist over the wide variation quality of online health-related information (Sheehan et al., 2003).

To address this problem, several quality rating instruments to evaluate online health information were developed. These tools aim to assist users in sifting through the plethora of health information websites, so as to improve the overall quality of online health-related information. The HONcode is a quality assessment tool that has been devised by the Health on the Net Foundation (HON) (HONcode, 2008). This is a self-applied code of conduct, consisting of eight criteria for health information websites to voluntarily fulfil, in order to obtain a stamp approval from HON. DISCERN, a tool comprising of 16 questions, provides a set of guidelines for appraising health information websites via a questionnaire (Charnock and Sheppard, 2004). Netscoring is a detailed checklist containing 49 criteria that are grouped under eight categories for assessing online health information (Netscoring, 2001). Likewise, the eEUROPE checklist comprises of six general criteria for assessing quality of health-related websites.

While the above tools are useful for appraising health information websites, they are unable to evaluate domain specific information, as this would require domain customised criteria. In view of this, there are no quality rating instruments for evaluating drug interaction websites for ACD interactions, despite the high interaction predisposition with the use of ACD. (Scripture and Figg, 2006). A tool was therefore developed, specifically designed for this purpose.

¹ Student
² Graduate Student
³ Assistant Professor
METHODS

There were two main phases in developing this assessment tool. Firstly, a review of currently available assessment criteria was conducted. Next, for evaluating drug interaction information, general and specific criteria for content assessment were incorporated into the questionnaire. Having developed the tool, the second phase involved its pilot testing, where 4 drug interaction websites were evaluated.

The criteria components of four tools were compared based on nine general categories. While some tools are able to fulfil certain criteria categories well, they do not possess criteria for assessing quality in other categories. Nevertheless, they serve as useful sources of information on the general criteria aspects to consider and select in devising a comprehensive evaluation tool.

Drug interactions were a major focus of our assessment tool. As such, common parameters for assessing drug interactions were generated and converted into criteria for assessing the effects, mechanisms, risks, severity and management of drug interactions. Additionally, drug interactions between specific ACDs and anti-epileptic drugs (AEDs) were included for specific assessment of drug interaction information. All criteria were assigned appropriate scores before organising them into 4 categories – content, reliability, accessibility and ease of navigation. Upon development, the tool was used to evaluate 4 common drug interaction websites (Drugs.com, DoublecheckMD, DrugDigest and Medscape).

RESULTS AND DISCUSSION

Results: creation of evaluation tool

A tool for evaluating drug interaction websites for ACD interactions was developed. It contains 26 questions, categorized under four domains. The questionnaire is divided into two parts. Part 1 assesses drug interaction information between specific chemotherapy regimens and AEDs while part 2 contains questions for general website quality appraisal. The maximum total score out of the two sections is 50 points.

Part 1 of the tool measures the accuracy and clinical usefulness of specific drug interaction information. Part 1 assesses interaction information between 3 chemotherapy regimens/ACDs and commonly used AEDs. Evaluating information on specified drug interactions facilitates comparison of websites based on information accuracy and detail. Separating general and specific questions allows for tool versatility as this same assessment tool can be utilized to assess drug interactions in other specialities, simply by changing the relevant drug pairs in Part 1 of the questionnaire. Part 2 comprises of questions which assess the overall quality of drug interaction websites. It focuses on substitute indicators of information quality (e.g. privacy policy). Given its general approach, part 2 of the questionnaire might be useful for laypersons or patients who may not be able appreciate the detailed assessment that part 1 provides.
Results: pilot test of evaluation tool

Results obtained from the pilot study are shown in table 1 below.

Table 1. Results from evaluation of drug interaction websites.

<table>
<thead>
<tr>
<th>Evaluated Websites</th>
<th>Domain Scores</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Content (24)</td>
<td>Reliability</td>
</tr>
<tr>
<td>DoublecheckMD</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>DrugDigest</td>
<td>11.9</td>
<td>8</td>
</tr>
<tr>
<td>Drugs.com</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>Medscape</td>
<td>12.4</td>
<td>5</td>
</tr>
</tbody>
</table>

Scores obtained for content domain

Drugs.com and DoublecheckMD scored the highest for content (16 out of a possible 24). Both websites successfully identified 5 out of the 7 specific drug interactions in Part 1. DrugDigest, the lowest scorer, only managed to identify 2 out of the 7 interactions that were searched for. The total average scores (mean +/- standard deviation) for content are 14.1 +/- 2.2.

Total scores obtained

The highest total scores were again obtained by Drugs.com and DoublecheckMD (each scoring 33 out of a possible 50 points). The lowest total scorer Medscape was also the lowest scorer for the ‘Ease of Navigation’ domain (3 out of a possible 8 points) and joint low scorer for ‘reliability’ and ‘accessibility’. The average total scores were 31.3 +/- 2.67.

LIMITATIONS AND FUTURE WORK

Our tool does not contain a question to evaluate the aesthetic quality of drug information websites. Although the visual appeal of a website an important indicator of quality, it was avoided because of the inherent subjectivity involved in its scoring. Subjectivity affects the reliability of the questionnaire by increasing inter-rater variability. Therefore, objectively assessable criteria were the focus of this tool.

The next phase would be to conduct usability tests for further tool refinement. Following this, it would be used to assess drug interaction websites. This study would ideally involve oncology healthcare professionals. Scores obtained would then be subjected to statistical analysis to determine inter-rater agreement of scores.

CONCLUSION

An assessment tool was developed for assessing the quality of ACD interaction information that is available online. This tool lays the groundwork for the long-term validation all online drug interaction information.
REFERENCES


