Data of the Systematic Literature Review: Factors known to Influence Acceptance of Clinical Decision Support Systems

Search strategy and overview of included articles.

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Technical report TR2011-02

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Date: March 01, 2011
Version 1.0
Page count: 3
Introduction

This technical report provides an overview of the search strategy and the included articles in the systematic review titled “Factors known to Influence Acceptance of Clinical Decision Support Systems”. Even though the evidence of Clinical Decision Support Systems (CDSSs) improving clinical performance and patient outcomes is convincing, the failure rate in introducing CDSS in clinical practices is still over 50 percent. Introducing a CDSS seems fraught with obstacles among which low ease of system use, negative end-user attitudes towards the system and negative impact on clinical workflows. But studies that evaluate CDSS implementation in clinical care continue to provide insight into these and other factors influencing acceptance of CDSSs. By systematically reviewing the status quo on what is known on factors contributing to CDSS acceptance this study aims to contribute to a wider understanding of issues surrounding CDSS implementations in clinical care and in doing so illustrate the gaps in current research on CDSS acceptance.

1. Methods

1.1. Applied definitions

<table>
<thead>
<tr>
<th>Key term</th>
<th>Mesh term</th>
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<tbody>
<tr>
<td>Clinical Decision Support System</td>
<td>Decision Support Systems, Clinical Computer-based information systems used to integrate clinical and patient information and provide support for decision-making in patient care.</td>
</tr>
<tr>
<td>Attitude to computer</td>
<td>Attitude to Computers The attitude and behavior associated with an individual using the computer.</td>
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</tbody>
</table>

1.2. Search strategy

A literature search was conducted to determine the factors that are associated with acceptance of CDSS. Pubmed, Web of Science, The Cochrane Library and IEEE xplore were systematically searched. The conducted search combinations are shown in table 1.

<table>
<thead>
<tr>
<th>#</th>
<th>Source</th>
<th>Search terms</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Pubmed</td>
<td>(Decision Support Systems, Clinical support system AND (user acceptance OR Attitude to Computer)[Mesh])</td>
</tr>
<tr>
<td>2</td>
<td>Cochrane</td>
<td>Decision support system</td>
</tr>
<tr>
<td>3</td>
<td>IEEE xplore</td>
<td>Clinical decision support system -&gt;(refined with) acceptance</td>
</tr>
<tr>
<td>4</td>
<td>IEEE xplore</td>
<td>Clinical decision support system -&gt;(refined with) deployment</td>
</tr>
<tr>
<td>5</td>
<td>IEEE xplore</td>
<td>Clinical decision support system -&gt;(refined with) usability</td>
</tr>
<tr>
<td>6</td>
<td>IEEE xplore</td>
<td>Clinical decision support system -&gt;(refined with) attitude</td>
</tr>
<tr>
<td>7</td>
<td>IEEE xplore</td>
<td>Clinical decision support system -&gt;(refined with) interface design</td>
</tr>
<tr>
<td>8</td>
<td>Web of Science</td>
<td>Clinical decision support system AND user acceptance</td>
</tr>
<tr>
<td>9</td>
<td>Web of Science</td>
<td>Clinical decision support system AND usability</td>
</tr>
</tbody>
</table>

Table 1 Conducted search combinations

All abstracts resulting from these search queries were reviewed by the first author. The second and third author each reviewed half of the set of abstracts. Studies were included if they assessed factors contributing to or impeding acceptance of CDSS or physician’s attitudes towards CDSS. A second screening of the resulting set of included papers was done on basis of full text review by the first, second and third author. All papers that were
finally included were textually analyzed for their description of factors influencing CDSS acceptance among physicians. Each of these factors was categorized according to the HOT-fit framework (30) by the first author.

1.3. The HOT-fit evaluation framework

Building on the knowledge base of evaluation studies of Health Information systems (HIS) Yusof et al. proposed a framework to evaluate HIS while incorporating the concept of fit between Human, Organization and Technology (HOT-fit). In the HOT-fit framework these three domains are subdivided into eight interrelated dimensions: 1) System Quality, Information Quality and Service Quality fall under the Technological domain, 2) System Use and User Satisfaction under the Human domain and 3) Structure and Environment under the Organization domain. The eight dimension is Net benefits. While human, organizational and technology are the essential components of Information Systems, factors concerning the impact of HIS are categorized under the Net benefits dimension. In the framework, the concept of fit is concerned with the alignment between and compatibility of the human, technology and organization.

The studies included in this systematic literature review were analyzed for their description and evaluation of factors related to user acceptance of a CDSS. Factors found were subsequently mapped on the HOT-fit framework. This mapping provided an overview of those domains and dimensions in which factors have been evaluated with regard to physicians’ acceptance of CDSSs in clinical practice. Factors concerning the domains or dimensions which have not been studied provide insight into the gaps in the literature on CDSS acceptance and provide directions for further research.

2. Results - Overview included articles


[5] H. Varonen, T. Kortteisto, M. Kaila, EBMeDS Study Group, What may help or hinder the implementation of computerized decision support systems (CDSSs): a focus group study with physicians, Fam Pract 25(3)(2008), 162-7.


[26] E.S. Berner, R.S. Maisiak, Influence of case and physician characteristics on perceptions of decision support systems. J Am Med Inform Assoc. 6 (5)(1999), 428-34.


