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Assessment of a Prototype Diagnostic Nursing Decision Support System for Inpatients with Type II Diabetes Mellitus

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Abstract

Nurses are often asked to make quick decision with incomplete information under time pressure. For clinical decisions, computerized clinical decision support system can be used as tools to help with these decisions when it is implemented appropriate. This study was performed to obtain opinions on a previously developed diagnostic nursing decision support system developed by these researchers in order to aid the further development of the system. Knowledge representation and the appropriateness of our approach were assessed based on user feedback of a prototype system. Twenty-five NANDA diagnoses and 145 clinical assessment variables were structured into a criteria table. Twenty-seven nurses from inpatient and ambulatory settings and a graduate course on nursing informatics were recruited, and a scenario-based preliminary evaluation was performed. Based on these opinions w described the advantages and disadvantages of the prototype system.

Keywords:

Decision Support System, nursing diagnosis,
user evaluation

Methods

To acquire the relevant knowledge, a systematic literature review was conducted iteratively to establish nursing diagnoses and clinical assessment criteria. Twenty-five NANDA diagnoses and 145 clinical assessment variables were structured into a criteria table as the knowledge base for a prototype Web-based stand-alone system. This system automatically generates a nursing problem list based on the input data and detailed explanatory information for each item on the list.

Feedback on the system was obtained from 27 volunteer nurses: 17 from inpatient units and 10 from ambulatory settings and a graduate course on nursing informatics. The nurses from inpatient units were using electronic nursing record system every day and providing diabetes mellitus care for more than 10 years. The nurses from ambulatory settings had specialties in educating diabetes mellitus patients.

We asked the nurses to read the scenario developed by researchers based on the case studies selected from the nursing textbooks, and to look at the results produced by the system. They then completed a questionnaire on their opinions on the functions and the nursing problem list generated by the system.

Results

The nurses' responses to the suggested nursing problem list were summarized below, categorized into advantages and disadvantages that were mentioned more than twice.

Advantages:

- Well organized, making it easy to determined patients' problems.
- Easy to understand due to the data-driven approach.
- Convenient to obtain the problem list automatically.
- Able to consider all the potential relevant problems (which can be used as a reminder).

Disadvantages:

- Insufficient expression of NANDA terminology.
- Tedious or difficult to input data.
- No suggestion of nursing actions for each problem.
- Discrepancies between the priorities of suggested and selected problems.

Conclusion

The feedback from the nurses was useful and qualitative insights on identifying the requirements of a CDSS for nurses. This information will be used when we consider designing and development issues of a diagnostic CDSS.

So far diagnostic DSS had been limited on being adopted in clinical settings due to several implementation issues such as data capturing and redundant data entry. However, the current movement toward an EMR or EHR systems encourages us to consider on how to design it more effectively in the manner of integrated with those systems.