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Abstract
Nursing information systems are computer systems that manage clinical data from a variety of healthcare environments, and made available in a timely and orderly fashion to aid nurses in improving patient care. A nursing diagnosis is a standardized statement about the health of a patient for the purpose of providing nursing care. Nursing diagnoses are developed based on data obtained during the nursing assessment. Because a new nurse or student nurse lacks for nursing knowledge and experience, it is difficult to make an appropriate nursing diagnosis for nursing care plan.

The purpose of this study is to apply latent semantic analysis (LSA) to develop a support-decision syetem for nursing diagnosis. Specific aims are (1) to establish the database including standardized characteristic keywords, electronic nursing records and nursing intervention, (2) to develop an algorithm for decision-making of nursing diagnosis, and (3) to validate the accuracy of the system. System architecture consists of a data pre-process and a decision process. The data pre-process is to establish a database of standardized characteristic keywords extracted from Gordon's manual of nursing diagnosis and clinical nursing record documents (NRDs). The decision process includes keyword matching, establishing a keywords-documents co-occurrence matrix, TF-IDF matrix transformation, applying LSA to calculate similarity between nursing record documents and nursing diagnosis and make a proper nursing diagnosis. We invite a nursing expert to simulate twenty patients' conditions with 9 different nursing diagnoses. Seven nurses hear each patient's nursing problem at the same time and write NRDs. Each patient has 7 NRDs. Cochran's Q method is used to test whether the content of 7 NRDs for each patient has the consistency statistically. Association rule is used to find out a cluster of discriminatively associated keywords in a nursing diagnosis.

The results of the content analysis show a consistency in 7 NRDs for each patient. The accuracy of the system is 87% in both non-using and using TF-IDF transformation. This system has completed functions including sentence segmentation, keyword matching and the decision algorithm of nursing diagnosis.
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