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User Requirements Analysis of the Intelligent Intensive Care Delirium Screening Checklist

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Abstract

The Intensive Care Delirium Screening Checklist (ICDSC) is an ICU delirium assessment recommended by the Society of Critical Care Medicine. Its diagnostic accuracy, however, is relatively low during routine practice among bedside nurses. This study aims to analyze the potential errors or mistakes made by bedside nurses using ICDSC, and to provide evidence for developing an intelligent ICDSC. The results showed issues associated with the paper–based ICDSC include easy to miss items, scored errors.

Keywords:

ICU delirium; The Intensive Care Delirium Screening Checklist; Mobile Health; User requirement analysis.

Introduction

The Intensive Care Delirium Screening Checklist (ICDSC) [1] is one of the ICU delirium screening tools recommended by current Clinical Practice Guidelines [2]. Compared with other delirium assessment tools, ICDSC that include 8 steps assessment has a unique feature that it can assess the severity and types of delirium in different patients. Though it is highly accurate in validation studies, the sensitivity and specificity is relatively low during routine practice among bedside nurses [1, 3]. The reason for such result maybe multifactorial, variation in the assessment procedures, easily make mistake in counting score when making diagnosis are possible causes for misdiagnosis or missed diagnosis of delirium in ICU settings. The implementation of mobile health (mHealth) in the field of assessment may help to overcome these limitations mentioned above. Apps can aid in diagnosis by providing information technologies such as automatic calculation to increases diagnoses and decreases missed diagnoses [4]. To our knowledge, no research has investigated the issues related to the use of the paper-based ICDSC. The purpose of this study is to determine and analyze the problems existing in the evaluation process of the paper-based ICDSC by the user requirement analysis method necessary for the information system development process, so that provide the evidence for the mHealth strategy formulation of the intelligent ICDSC in the next stage study.

Methods

We use the literature review method and the task walkthrough method that is the method of the user requirements analysis for information system to identify issues related to the paper-based ICDSC. We performed a systematic MEDLINE, CINAHL and EMBASE databases search using the keyword "icdsc", "intensive care delirium screening scale" from January 2001 through November 2017 to searched for the articles on the use of ICDSC. The task walkthrough is conducted by inviting ICU nurses from two hospitals in Beijing to evaluate 4 scripts of patient case by using paper version of ICDSC. The researchers observe and record problems in the process of assessment tasks. An information saturation was reached when 15 nurses undertook task walkthrough.

Results

Of 144 articles on the topic of use of ICDSC, 7 identified issues associated with the paper-based ICDSC. Time-consuming and misunderstanding of the assessment item were reported in 2 and 3 articles respectively. Inaccurate or missed nursing records were noted in 4 articles. Of the 15 nurse participates, 9 made errors in item comprehension in step1, one nurse has the problem of missing item in step 2, 12 nurses cause errors due to the lack of nursing records in the assessment of the step 7. The assessment time that the 15 nurse spent ranged from 8minutes to 13minutes.

Conclusions

The findings of this study show that issues associated with the paper–based ICDSC include misunderstanding about items, error in scoring and assessment and time-consuming. So in the next stage study of the development of intelligent ICDSC, mHealth strategies should be developed to address issues identified, and automatically transferred the patient's nursing records from the hospital information system.

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