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Psychometric testing of the evaluation tool of the simulation-based learning for nursing education: A Chinese version instrument

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Background: To bridge nursing education and the clinical practice setting, simulation-based learning (SBL) has blended with nursing curricula. However, the instruments that evaluate student perception of receiving simulated training are English versions and have not been tested for reliability or validity.

Purpose: The aim of this study was to develop and validate a Chinese version nursing competency with simulation-based learning scale (CNC_SBLC).

Research: Design Three stages were conducted to develop and validate the CNC_SBLC. First, specific desired competencies that are expected of students after simulation were identified according to the Taiwan Nursing Accreditation Council (TNAC) core competencies, including professional knowledge, general skills, nursing process, cooperation, communication, and critical thinking. The initial item pool was comprised of 86 items related to simulation that were drawn from the literature based on TNAC core competencies. Next, content validity was established by use of an expert panel. The final stage was conducted to examine validity and reliability of the CNC_SBLC. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted for construct validity, and Cronbach's coefficient alpha determined the scale's internal consistency reliability. Eighty students who had experienced SBL and completed their last-mile practicum were invited to participate in test of EFA. Once the factors were determined, the authors recruited another eighty students for CFA.

Result: An expert panel was invited to review each item for clarity, conciseness, relevance, and necessary. From the initial item pool, eighteen items were deleted and 8 were rephrased. The initial scale consists of professional knowledge (8 items), general skills (10 items), nursing process (10 items), communication (8 items), and critical thinking (12 items). Next, EFA with varimax rotation revealed four factors: problem solving (8 items), technical skills (12 items), professional knowledge (8 items), and critical thinking (7 items). The four factors accounted for 66% of the variance. After factor analysis, thirteen items were deleted because of a low factor loading, and 35 items were retained. Each subscale determined internal consistency: .90, .86, .82, and .81 respectively. The construct validity of CNC_SBLC was substantiated in a CFA that revealed a good fit of the hypothesized factor structure (Comparative Fit Index [CFI] = .965; Standardized Root Mean square Residual [SRMR] = .071). The scale account for 64 % of the variance, and the composite reliability (CR) is .78. Items were rated on a 5-point scale from 1 (Strongly disagree) to 5 (Strongly agree).

Conclusions: The results of this study indicate that CNC_SBLC are valid and reliable. The authors recommend the scale be applied in the nursing school to evaluate the effective of SBL curricula.

Biography

Chang-Chiao Hung was born in Kaohsiung, Taiwan. She received her BSN from Emory University, USA, in 1997, MSN from University of South Alabama, USA, in 1999, and her Ph.D. in Nursing from University of North Carolina at Chapel Hill, USA, in 2011. She is currently an Assistant Professor of Nursing at the Chang Gung University of Science and Technology. Her research interests have been in the areas of patient safety, organizational behavior, and nursing education.

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