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## Original Article

## Improve nursing in evidence-based practice: How Chinese nurses' read and comprehend scientific literature

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## ABSTRACT

**Objectives:** To examine Chinese nurses' practice of reading and understanding scientific literature and elucidate the motivating and deterring factors.**Methods:** This is a cross-sectional study conducted between March and June 2015. A random sample of 853 full-time registered nurses from three tertiary and two secondary hospitals in China filled out a set of self-administered questionnaires, including literature habit questionnaire(41 items), the situational motivation scale and the socio-demographic and professional characteristics questionnaire(15 items).**Results:** Significant majority (89.2%) of the respondents reported perception of barriers to keeping up to date with literature. The language barrier was the most prominent, followed by poor presentation and readability of articles. Using simpler language when writing articles, improving ones' foreign language proficiency and getting education or training on nursing research were raised as the top facilitators. Additionally, reading and understanding literature was significantly associated with the nurses' educational background, motivation, genders and work settings.**Conclusions:** The survey of the current status of literature education among Chinese nurses suggests that providing protected time, training for critical thinking, and incentive mechanisms will help improve nurses' engagement in literature and create a culture of academic inquiry.© 2017 Chinese Nursing Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

With increasing societal expectation for high quality and outcome driven medicine, nursing care is moving away from rituals and traditions toward evidence-based delivery models [1]. Nurses are expected to understand and apply research evidence into clinical practice. This process not only enhances the clinical effectiveness and improves patient outcomes, but also facilitates personal and professional growth for nurses [2,3]. Nurses are also encouraged to partake in and initiate research and quality

improvement activities in their institutions [4]. Unfortunately despite abundant clinical and health services research production, the translation of research findings into practice remains slow and haphazard [5–7], resulting in a so-called “research-practice gap”. As a profession dedicated to the front lines of healthcare, nurses are uniquely situated to close this gap by harnessing and contributing to knowledge in the scientific literature.

One of the major challenges in professional development for nurses is nurturing of the ability to understand and evaluate research articles for potential practical application [8]. The readability and comprehensibility of articles have been frequently reported to contribute to nurses' perceived barriers to research utilization [9–11]. For example, the amount of information presented can be overwhelming and the nurses do not know how to distinguish and retrieve the relevant pieces [6]. The statistical analyses can be mystifying; applicable research findings can be

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hidden and inaccessible; the content of the article can be obscure and unrelated to daily clinical practice; and the articles can be poorly written or presented [3,12]. As most articles are published in English, language barrier can be a significant obstacle for nurses in China and other non-English speaking regions [3,13].

Reading and understanding research articles is essential for nurses to acquire up-to-date knowledge and apply it to improve patient care [13]. Nurses may rarely read scientific articles due to a variety of reasons, including lack of time or interest [4]. Some nurses may have the desire and intention to read, but are prevented from doing so by shortages in foundation knowledge and language barriers. To date, factors involved in nurses' engagement with literature have not been well explored and there is limited insights into how to improve nurses' capacity to effectively digest and use information found in the literature.

China has one of the largest cohort of nurses in the world [6]. It is imperative to bridge the gap between research and practice in China under the policy of "High Quality Nursing Care" [14]. The quantity and quality of research periodicals have rapidly grown, providing nurses with valuable resources. There are more than 20 Chinese nursing journals [15]. One study showed that 84% Chinese nurses read articles routinely; however the finding cannot be readily generalize as the sample size was limited [15]. In order to encourage research utilization, more research is needed to examine the reading motivations, habits, and barriers, and formulate facilitating strategies.

The aim of this study was to examine factors associated with reading and understanding literature among Chinese registered nurses working in the hospital setting. The specific objectives were to: 1) investigate the reading habits of nurses; 2) identify the barriers that hinder the reading and understanding of literature among nurses; 3) examine the level of motivation for nurses to read literature; 4) explore modifying factors for the barriers and facilitators of reading and understanding literature; and 5) suggest ways to promote familiarity with literature. This study may contribute to the design and delivery of targeted nursing education or intervention program to improve nurses' ability of reading and understanding literature.

## 2. Methods

### 2.1. Study design

This is a cross-sectional study conducted between March and June 2015.

### 2.2. Setting and sample

A cluster sample of registered nurses were recruited from three tertiary hospitals (500 beds each) and two secondary hospital (300–500 beds) in Changsha, Haikou and Harbin, China. A total of 900 full-time registered nurses were selected from the staff lists randomly (200 nurses recruited from each tertiary hospital and 150 nurses from each secondary hospital) and asked to complete a confidential self-administered questionnaire.

### 2.3. Ethical considerations

This study was approved by the Institutional Review Board of CSU (Grant Number: 2015036). The front page of the on-line questionnaire included an explanation of the purpose of the study and a guarantee of anonymity and confidentiality of the information provided. The completion of the questionnaire was taken as consent to participation.

## 2.4. Data collection

### 2.4.1. Literature habit questionnaire

This questionnaire was developed based on literature review (e.g., [9]), semi-structure interview with 15 registered nurses and 10 experts. The questionnaire had good internal validity with Cronbach's  $\alpha$  of 0.85 and content validity index of 0.81. In addition to the reading habits (including frequency, quantity, and goals of reading), participants were asked whether they thought each item constituted a barrier or facilitator for reading and understanding literature and provide reasons for not reading more. Participants were asked to rank items they considered as the top three barriers, reasons and facilitators. They were also invited to leave additional comments and insights.

### 2.4.2. The situational motivation scale (SIMS)

The Chinese version of the SIMS [16] was used to evaluate the motivation of reading literature among registered nurses. The SIMS contains 16 items covering four domains, including situational intrinsic motivation, identified regulation, external regulation, and motivation. A seven-point Likert-type scale (ranging from 1, "not at all" to 7, "exactly") is used to assess why someone currently engages in an activity. The published Cronbach's  $\alpha$  of the SIMS was 0.76–0.83 [16]. In this study, Cronbach's  $\alpha$  of the SIMS was 0.83.

### 2.4.3. The socio-demographic and professional characteristics questionnaire

Background information collected include age, gender, marital status, level of education, religion, position, professional title, years of experience working as a nurse, institution, hospital, ward, research and teaching experience, tutor and previous training on nursing research.

## 2.5. Data analysis

All statistical analyses were conducted using SPSS version 16.0. Frequency, mean and standard deviation were used to describe the socio-demographic characteristics of the nurse respondents and to summarize the questionnaire scores. Pearson correlation analysis was used to examine the relationship between the barriers/facilitators of reading literature and reading motivation. Independent *t*-test and one-way ANOVA were used to compare the scores for barriers and facilitators among different demographic groups. Multilinear stepwise regression was performed to assess factors associated with barriers or facilitators. The dependent variable was the total scores of barriers and facilitators. Independent variables were the socio-demographic and professional factors shown to have significance in the independent *t*-test or one-way ANOVA. Statistical significance was established at  $P < 0.05$ . As categorical variables, gender, level of education, years of experience working as a nurse, religion, institution, hospital, professional title, and ward were transformed into dummy variables in linear regression with male, master's degree or above,  $\geq 21$ , no religious faith, secondary (level 2) hospital, non-teaching hospital, senior nurse, and assist ward as the reference group.

## 3. Results

### 3.1. Participant characteristics

A total of 900 questionnaires were distributed, and 860 were returned. Seven were incomplete and discarded, yielding 853 (666 from tertiary centers, 187 from secondary hospitals) for analysis (response rate 94.8%). The respondents' mean age was  $28.82 \pm 6.49$  years. The vast majority (96.1%) was female, 78.1% was primary

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