Coping self-efficacy of Chinese nursing undergraduates with their research projects

Wei Zhang [a,b], Kun Li [a], XiuMin Zhang [b,*], Li Chen [a,*]

[a] Nursing College of Jilin University, Changchun, Jilin Province, China
[b] School of Public Health of Jilin University, Changchun, Jilin Province, China

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ABSTRACT

Background: Undergraduate nursing education includes both professional knowledge and research skills. With regard to training nursing professionals for future healthcare settings, the ability to conduct research is fundamental for nurses after they graduate from universities. However, how nursing students develop coping self-efficacy and scientific skills as a specific ability during their professional study has received little attention.
Objectives: We studied nursing undergraduates' scientific research ability and its associated factors in the Chinese context and evaluated their self-efficacy for coping with research tasks.
Methods: A total of 134 nursing undergraduates participated in the study. A purposely designed 22-item question-naire was used to quantify students' research ability in implementing their research projects and the associated factors. Coping self-efficacy was measured with a modified Chinese version.
Results: The mean total self-efficacy score was 50.78 ± 6.604 (M ± SD). The majority (63.4%) of the students' coping self-efficacy was at a moderate level. Having "the ability to write a manuscript before conducting research projects" ($P = 0.006$) and "topics determined by instructors after discussion with group members" ($P = 0.005$) were the two predictive factors of good coping self-efficacy in students.
Conclusion: Nursing undergraduates' self-efficacy was high enough to cope with their scientific research projects, but the information on procedures needed for project application was not abundant, and new training programs might be needed to meet the needs of nursing undergraduates. We should make full use of the predictors of good coping self-efficacy and promote nursing undergraduates' research ability.

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1. Introduction

The importance of evidence-based practice (EBP) and research has been prevalent in nursing for as far back as 1972. The notion that "nursing should become a 'research-based' profession" has been recommended by Briggs (Department of Health and Social Security, 1972). The pressing theme of research remains indispensable in the development of the nursing profession and is consistent with an attribute of its occupation, that is, a knowledge base grounded in research (Johnson et al., 2010). In nursing, research skills are considered important and essential in supporting practical skills. Estes et al. (2009) acknowledged that qualified nurses need to balance between research and patient care, which is their primary responsibility; however, a number of nurses think they do not have enough education and skills to conduct research in clinical practice. In addition, while teaching and supervising nursing students, professionals have noticed that many students seem to lack basic research skills in searching the literature, analyzing data and writing manuscripts. A plausible explanation could be that only professional knowledge, not academic capability, had been emphasized in their education. In fact, the education of nursing undergraduates includes both professional knowledge and research skills. With regard to training nursing professionals for future healthcare settings, research ability is fundamental for nurses after their graduation from universities. However, how undergraduates cope with their scientific tasks has obtained little attention.

This study investigated nursing undergraduates' research ability, which has become a prerequisite for working in a dynamic world with rapid changes. To the best of our knowledge, our study is the first to report whether and how nursing students cope with their research loads in China. In this study, we hypothesized that there was a close relationship between coping self-efficacy and research ability and that some factors could affect nursing undergraduates' coping self-efficacy. The aims of the study were to explore the status of nursing undergraduates' research ability and their coping self-efficacy and to study the relationship between coping self-efficacy and other influential factors.

2. Background

The general construct of self-efficacy refers to the belief that an individual has the ability to execute a task and thus to acquire a desired

* Corresponding authors.
E-mail addresses: zhangxiumin63@163.com (X. Zhang), chenl@jlu.edu.cn (L. Chen).

outcome (Bandura, 1997). As suggested by Maddux (2002), "Self-efficacy is defined and measured as beliefs about the capability to balance skills and abilities to gain the desired goals in particular domains and circumstances." It has been shown that self-efficacy can influence the level and persistence of efforts made to act effectively; in most cases, an individual will adopt a behavior if they perceive that they are capable of adopting the behavior and also if they believe that the outcome of such behavior will have a specific desired effect (Pisanti et al., 2015). One can increase students' self-efficacy, which is related to the beliefs in their ability to accomplish an objective. The evaluation of coping self-efficacy provides a measurement of the balance between the behavior and the beliefs.

Accordingly, it has been suggested that the abilities regulating learning and academic performance include the following: both general and specific creativity, intellectual abilities, and motivation (Ordaz-Villegas et al., 2013). Most nursing practitioners may believe that research is more difficult than clinical work. If coping self-efficacy can promote the impact of their research ability and have direct effects on their innovation capability, the focus should be placed on how to equip nursing students with enough knowledge and to increase their coping skills. In other words, learning is necessary to not only progress aptitudes, obtain knowledge, and create strategies but also to improve intent and disposition (López et al., 2011), which will provide learners with good coping skills. Newly qualified nurses, through the development of modern nursing education systems, may have enhanced skills to conduct research. Nursing students from higher education institutions (HEIs) agree that EBP and research provide them with confidence, knowledge and empowerment in clinical practice (Brooke et al., 2015). The emergent theme of research as being vital for improvements in patient care and safety is widely recognized in the literature. Students undoubtedly benefit from their research capability, which is useful for their competence in the future.

In China, more and more attention has been paid to increasing creativity and academic skills, but the study load of nursing undergraduates is heavy. Regarding workload, nursing students experience long study hours and relatively little free time. A study conducted by Zhao et al. (2015) revealed that assignments and workload were the most common stresses of Chinese nursing undergraduates. Nursing students are not only educated with professional curricula but they also complete some research tasks, which occupies their extra time. However, the education objectives in nursing schools and the need for advanced practical work compels nursing undergraduates to quickly enhance their creativity and originality. The evidence on direct and/or moderating effects of academic research self-efficacy in nursing students leads to the recommendation to promote training in research ability that focuses on how to cope more effectively during nursing care education. Previous studies have reported that nursing undergraduates' self-efficacy outcomes concentrated on both writing competency (Miller et al., 2015) and their ability to pursue research (research self-efficacy) with perceptions of their mentors (Lev et al., 2010). However, how nursing students develop coping self-efficacy and scientific skills as a specific ability during professional study has received little attention. Because of the need for advanced practice nurses who attain a better performance, this paper discussed the factors influencing the scientific research ability of nursing students and their coping self-efficacy with pressing scientific tasks and made recommendations to increase students' self-efficacy.

3. Methods

3.1. Participants

This cross-sectional study was carried out in the Nursing School of Jilin University in China in the fall of 2015. The subjects were determined by convenience sampling. A total of 143 nursing students who were involved in national and university scientific projects were invited to participate in this study. Of these, 134 of the nursing students responded and were included in this study. All students were undergoing full-time studies.

3.2. Study Design and Questionnaires

A purposely designed 22-item questionnaire was used to quantify students' research ability in applying their research projects and the associated factors. The survey instrument was a three-part questionnaire and was written in Chinese. Part 1 referred to the respondent's baseline characteristics and consisted of 10 items: grades, cadres, scholarships, English proficiency level, research project levels, publication of their thesis, being a chief or attendant, and learning the subjects of information retrieval and statistics. Part 2 concerned the factors and attitudes regarding their research projects and included 7 items: how they decided on their research topics, the absence or presence of a specific ability to carry out projects, the help they would receive to implement a project, and the related factors that influenced their research interests. Part 3 assessed the electronic information means used to perform scientific research projects and comprised 5 items: the websites used when applying research, the information technology modalities used when their topics were being decided, and whether information technology was used to learn the subject of retrieval and statistics.

As each situation has unique components, it is unlikely that a common self-efficacy scale would suffice. This presents a possible issue regarding the development of a reliable and valid self-efficacy scale. When we conduct research, it is arguably more important to develop a scale that has content validity to assess the key factors in specific situations. (McConville and Lane, 2006). Consistent with self-efficacy theory, however, it is possibly better to demonstrate the utility of a scale through cross-validation. Therefore, in the present study, self-efficacy measures were targeted towards situations/sets of circumstances related to research projects and particularly the associated experiences. A 17-item coping self-efficacy in nursing scale was developed.

In this study, self-efficacy was measured using a modified Chinese version (Tong, 2005) of the scale originally developed by Sherer and colleagues (Sherer and Brisbane, 1982). The reliability of this scale was reported to be 0.88 (Tong, 2005). The questionnaire contained 17 items measured in three subscales: self-confidence (items 1–3), competency, (items 4–7 and 10), and cognitive level (items 13–17). Items 8, 9, 11 and 12 were not included in the three subscales, but they contributed to the evaluation of total coping self-efficacy. The questions were derived and adapted from a study by Tong JH in which the sample was 1806 undergraduates in Chinese universities; therefore, this scale was suitable for nursing undergraduates. The answers were rated on a four-point Likert scale and were given as follows: 1, strongly disagree, 2, slightly disagree, 3, slightly agree, and 4, strongly agree. The sum of the item scores reflects general self-efficacy. The higher the total score, the more self-efficacious the respondents. Of the total possible score (68), a score from 17 to 40 (less than 60% of the total score) was classified as low/poor coping-efficacy, from 41 to 54 (60–79% of the total score) as moderate, and from 55 to 68 (equal or greater than 80% of the total score) as high/good. The Cronbach's alpha coefficient in this study was 0.840.

3.3. Data Analysis

To assess the characteristics of the subjects, descriptive analysis and frequencies were used. Differences between groups were assessed with independent sample t-tests for continuous variables. Data were analyzed using SPSS/Win 10.0 (SPSS 17.0, China), and the level of significance was set at 0.05 in a two-tailed test for all tests. Multiple regression analysis was used to explore the associations between coping self-efficacy (dependent variable) and various explanatory variables.