Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132

Original Article

Self-directed learning readiness and nursing competency among undergraduate nursing students in Fujian province of China

CrossMark

*Gui-Fang Yang, Xiao-Ying Jiang**

School of Nursing, Fujian Medical University, Fuzhou, China

ABSTRACT

Aims: We examined the relationship between self-directed learning readiness (SDLR) and nursing competency among undergraduate nursing students.
Background: There is little evidence-based data related to the relationship between self-directed learning (SDL) and nursing competency.
Methods: A descriptive correlational design was used. We conducted convenience sampling of 519 undergraduate nursing students from three universities during their final period of clinical practice. We investigated SDL according to the SDLR scale for nursing education (Chinese translation version), and used the Competency Inventory for Registered Nurses to evaluate nursing competency.
Results: The mean SDLR score of the students was 148.55 (standard deviation [SD] 18.46), indicating intermediate and higher SDLR. The mean score for nursing competency was 142.31 (SD 30.39), indicating intermediate nursing competence. SDLR had a significant positive and strong relationship with nursing competency.
Conclusion: SDLR is a predictor of nursing competency.

1. Introduction

Nurses work in a multifaceted healthcare setting, where they constantly face challenges stemming from the ongoing social and scientific changes inherent in the healthcare field. Mac-Gregor states that nurses are prepared as generalists at the undergraduate level [1]; upon employment, they often find themselves feeling like novices in facing the challenges of providing safe and quality care. The responsibility of nursing education is preparing and supporting nurses so that they can successfully adjust and respond to these challenges.

Competency-based education, which has been recognized for years in nursing education [2], is crucial for safe and efficient nursing services. Nursing competency has been defined as the knowledge, skills, ability, and behaviors a person possesses to perform tasks correctly and skilfully [3]. Self-directed learning (SDL) can be defined in terms of the amount of

responsibility a student accepts for their own learning [4]. The self-directed learner takes control and accepts the freedom to learn what they consider important for themselves. Some scholars have found that better SDL readiness (SDLR) is related to better academic performance [5]. Hence, there is reason to believe that SDLR might affect nursing competency. However, there are few evidence-based data related to the relationship between SDLR and nursing competency. Therefore, exploring the relationship between the two focus variances is essential.

2. Methods

2.1. Design and sample

We used a cross-sectional and correlational research design to recruit undergraduate nursing students from three universities during their final period of clinical practice in May 2013 in Fujian Province, China. We performed convenience sampling at each university. The inclusion criteria were: (1) undergraduate nursing students; (2) having practiced for >8 months. The exclusion criterion was students with psychological diseases.

According to the experience sampling method [6] and earlier similar research [7], we determined that about 87 participants was sufficient.

2.2. Instruments

In addition to background data such as age, sex, and hospital grade of practice, we used two instruments in this study: the SDLR scale and the Competency Inventory for Registered Nurses (CIRN).

2.2.1. SDLR scale
The 40-item SDLR scale was developed by Fisher et al. for nursing education to assist nursing educators in diagnosing the student attitudes, abilities, and personality characteristics necessary for SDL [4]. The Chinese version of the SDLR scale was developed and previously reported by Wang et al. [8] It is a 5-point Likert scale (1, strongly disagree; to 5, strongly agree) that contains three domains: self-management, desire for learning, and self-control. Overall scores range 40–200; higher scores reflect stronger SDLR. Mean scores >150 indicate a high level of SDLR, while mean scores ≤150 represent a low level of SDLR [4]. The original overall Cronbach's α of the Chinese SDLR scale was 0.926; the Cronbach's α for each subscale was 0.926–0.968. For this study, we confirmed reliability with an overall Cronbach's α of 0.957. The Cronbach's α for each subscale was as follows: self-management, 0.911; desire for learning, 0.914; self-control, 0.904. In the present study, test–retest reliability of total scores was 0.761 for a two-week period.

2.2.2. Competency inventory for registered nurses
Used for measuring nursing competency, CIRN was developed by Liu et al. and is based on the International Council of Nurses Framework of Competencies for the Generalist Nurse [9]. It consists of 58 items divided into seven dimensions: legal/ethical practice, interpersonal relations, leadership, professional development, clinical care, critical thinking/research aptitude, and teaching–coaching. The original reliability for this instrument yielded alpha values ranging from a high 0.86 for the leadership scale to a low 0.79 for professional development. These results are applicable for self-appraisal by generalist nurses and appraisal by their supervisors. Factor analysis has established construct validity. In this study, we confirmed reliability with an overall Cronbach's α of 0.975. Cronbach's α for each subscale was as follows: legal/ethical practice, 0.846; interpersonal relations, 0.852; leadership, 0.870; professional development, 0.803; clinical care, 0.882; critical thinking/research aptitude, 0.888; and teaching–coaching, 0.856. In the present study, test–retest reliability of total scores was 0.748 for a two-week period.

2.3. Statistical analysis

We established a database using EpiData 3.1 software. The focus variables were quantitative, therefore we adopted descriptive statistics and Pearson's correlations using SPSS version 17.0.

2.4. Ethical considerations

The Departmental Research Committee of the Nursing College of Fujian Medical University approved the research process, which the administrative authorities of each participating institution reviewed and approved. Consent to participate was implied by voluntary completion and returning of the questionnaire.

3. Results

3.1. Response rate

We recruited 666 students; we excluded 147 because of incomplete data; therefore, the response rate was 77.93%.

3.2. Sample characteristics of the sample

The sample age ranged 20–26 years; mean age was 23.18 years and standard deviation (SD) was 0.87. There were 396 (79.2%) female participants and 107 (20.6%) male participants. Of the participants, 506 (97.5%) were practicing in tertiary grade A hospitals and five (1.0%) were in tertiary grade B hospitals; the rest were practicing in secondary grade A hospitals. All participants were seniors and would be employed as registered nurses in the coming two months.

3.3. SDLR readiness and nursing competency

In this study, we used the SDLR scale to determine SDLR. Higher scores indicated a higher level of SDLR. The mean total score (n = 519) was 148.55 (SD18.46), with a range of 65–196, indicating that the SDLR of the participants was higher than intermediate level. The desire for learning subscale had the highest mean score of 45.40 (SD6.52), and the self-management subscale had the lowest mean score of 46.60

(SD6.86). The CIRN measures nursing competency; scores ranged 44–229, with a mean score of 142.27 (SD30.16), indicating that intermediate-level nursing competency among the students. The legal/ethical practice subscale had the highest mean score of 21.27 (SD4.54), and the teaching–coaching subscale had the lowest mean score of 15.96 (SD4.43) (Table 1).

There was a strong and statistically significant relation between total SDLR and total nursing competency: r (519) = 0.547, $p = 0.00$. All subscales were significantly correlated with total SDLR as well. The total SDLR was strongly related to five subscale scores (critical thinking/research aptitude, leadership, interpersonal relations, legal/ethical practice, and professional development), while total SDLR was moderately related to clinical care and teaching–coaching. Table 2 lists these results.

We computed the relationship between SDLR subscale scores and total nursing competency scores. All SDLR subscales were significantly correlated with total nursing competency scores. The self-management and self-control subscale scores were strongly related to the total nursing competency scores: r (519) = 0.50, $p = 0.00$; and r (519) = 0.53, $p = 0.00$, respectively. The desire for learning for study subscale score was moderately correlated showed a moderate correlation with the total nursing competency scores. The results are included cited in Table 3.

In addition, we explored the relationships between SDLR subscales and nursing competency subscales. The self-management subscale had strong significant correlation with professional development: r (519) = 0.52, $p = 0.00$, and moderate significant correlation with critical thinking/research aptitude: r (519) = 0.49, $p = 0.00$; clinical care: r (519) = 0.47, $p = 0.00$; leadership: r (519) = 0.47, $p = 0.00$; interpersonal relations: r (519) = 0.44, $p = 0.00$; legal/ethical practice: r (519) = 0.41, $p = 0.00$; and teaching–coaching: r (519) = 0.43, $p = 0.00$. The desire for learning subscale had moderate significant correlation with critical thinking/research aptitude: r (519) = 0.37, $p = 0.00$; clinical care: r (519) = 0.36, $p = 0.00$; leadership: r (519) = 0.43, $p = 0.00$; interpersonal relations: r (519) = 0.44, $p = 0.00$; legal/ethical practice: r (519) = 0.45, $p = 0.00$; professional development: r

(519) = 0.40, $p = 0.00$; and teaching–coaching: r (519) = 0.29, $p = 0.00$. The self-control subscale had strong significant correlation with leadership: r (519) = 0.53, $p = 0.00$; interpersonal relations: r (519) = 0.51, $p = 0.00$; and professional development: r (519) = 0.51, $p = 0.00$, and moderate significant correlation with critical thinking/research aptitude: r (519) = 0.49, $p = 0.00$; clinical care: r (519) = 0.46, $p = 0.00$; legal/ethical practice: r (519) = 0.48, $p = 0.00$; and teaching–coaching: r (519) = 0.43, $p = 0.00$. The results are presented in Table 4.

4. Discussion and conclusion

Our findings show that the students had intermediate and higher SDLR. Generally, mean scores >150 indicate a high level of SDLR, while mean scores ≤150 represent a low level of SDLR. In this study, the total score of 47.6% of students was high-level, indicating that almost half of them are suited to SDL. Dyck showed that SDL projects are not for everyone and may cause extreme anxiety and frustration in some students [10]. Hence, it is necessary to tailor teaching methods to foster the ability for SDL. Compared to the study of Wang et al., [11] most of whose participants were associate degree nursing students, the total scores and subscales scores of the SDLR scale in our study were higher, suggesting that baccalaureate nursing students have more capability for SDL. Yuan et al. explored the SDLR of Chinese baccalaureate nursing students [11]. With the exception of the self-control dimension, the

Table 1 – Mean, standard deviation and range of self-directed learning readiness scale and competency inventory for registered nurses ($n = 519$).

Variable	Mean ± SD	Range
Total SDLR scale scores	148.19 ± 18.34	65–196
Desire for learning	45.41 ± 6.53	12–60
Self-control	56.18 ± 7.24	29–75
Self-management	46.60 ± 6.86	13–65
Total CIRN scores	142.27 ± 30.16	44–229
Legal/ethical practice	21.27 ± 4.54	5–32
Interpersonal relations	20.39 ± 4.46	6–32
Leadership	24.96 ± 5.46	8–40
Professional development	14.70 ± 3.46	4–24
Clinical care	21.47 ± 5.15	4–36
Critical thinking/research aptitude	23.51 ± 5.56	8–39
Teaching–coaching	15.96 ± 4.43	2–28

CIRN = competency inventory for registered nurses; SD = standard deviation; SDLR = self-directed learning readiness.

Table 2 – Correlation between self-directed learning readiness scale total scores and competency inventory for registered nurses subscale and total scores ($n = 519$).

Variable	SDLR scale total score
Critical thinking/research aptitude	0.506[a]
Clinical care	0.485[a]
Leadership	0.532[a]
Interpersonal relations	0.523[a]
Legal/ethical practice	0.521[a]
Professional development	0.502[a]
Teaching–coaching	0.431[a]
CIRN total scores	0.548[a]

CIRN = competency inventory for registered nurses; SDLR = self-directed learning readiness.
[a] Correlation is significant at the 0.01 level (two-tailed).

Table 3 – Correlation between competency inventory for registered nurses total scores and self-directed learning readiness subscale and total scores ($n = 519$).

Variable	CIRN total score
Self-management	0.504[a]
Desire for learning	0.425[a]
Self-control	0.533[a]
SDLR total scores	0.548[a]

CIRN = competency inventory for registered nurses; SDLR = self-directed learning readiness.
[a] Correlation is significant at the 0.01 level (two-tailed).

Table 4 – Correlation between self-directed learning readiness subscale scores and competency inventory for registered nurses subscale scores (n = 519).

Variable	Self-management	Desire for learning	Self-control
Critical thinking/research aptitude[a]	0.490[a]	0.369[a]	0.489[a]
Clinical care	0.474[a]	0.359[a]	0.461[a]
Leadership	0.466[a]	0.427[a]	0.528[a]
Interpersonal relations	0.442[a]	0.439[a]	0.511[a]
Legal/ethical practice	0.414[a]	0.445[a]	0.484[a]
Professional development	0.523[a]	0.396[a]	0.512[a]
Teaching–coaching	0.426[a]	0.287[a]	0.433[a]

[a] Correlation is significant at the 0.01 level (two-tailed).

overall scores and all subscale scores in our study were lower than theirs, implying weaker self-management abilities and desire for learning in baccalaureate nursing students in Fujian Province. Some researchers have shown that problem-based learning and learning in small groups can foster SDL [12,13]. Therefore, it would be essential for nursing faculties to use the abovementioned effective teaching methods to improve these abilities.

The participants in this study will be employed as registered nurses in hospitals in the coming two months. Therefore, to test whether these pre-registered nurses have the basic skills to function in the workplace, which can be considered feedback for nursing education, it was necessary to determine their nursing competency using the CIRN. The mean total nursing competency scores in this study are significantly lower than the earlier findings of Wu et al., [14] who used the same scale to test the nursing competency of registered nurses in northeast China. This indicated that besides schooling, the continuous education from hospitals and work experience can also influence nursing competency. However, we noticed something interesting: although the nurses in the previous study had intermediate and higher nursing competency while that of the students in our study was intermediate, the subscale scores, in descending order, are similar, with legal/ethical practice and interpersonal relations scores being the highest, and critical thinking/research aptitude and teaching–coaching scores being the lowest. These findings support the views of Liao et al., [15] who stated that the development of nursing competency follows certain principles. Nursing competency can be accumulated by years of employment, but it is difficult to cultivate critical thinking/research aptitude in students. Therefore, it is necessary for faculties to pay more attention to fostering critical thinking and research aptitudes in nursing students. Zhang et al. applied discovery learning among undergraduate students, finding that it was an effective method for improving these abilities [16].

Our results showed that five CIRN subscale scores were strongly related to overall SDLR scale scores. This finding was not wholly unexpected, as the content for those particular items in CIRN generally involves various aspects of SDL. For example, leadership and interpersonal relations involve controlling your own behaviors, emotions, and desires to establish a good relationship with patients or colleagues; professional development involves career planning, time management, and controlling laziness; critical thinking/research aptitude and legal/ethical practice involve diligent studying to enrich one's knowledge of nursing programs and nursing-related legalities to perform competently as a nurse.

The other two nursing competency dimensions, clinical care and teaching–coaching, were moderately but significantly correlated with the overall SDLR scale scores. Clinical care skills are continually perceived as a basic competency in a professional nurse, while teaching–coaching is perceived as a more complex form of influencing (such as instructing and encouraging). These findings suggest that it is not appropriate to adopt SDL to cultivate clinical care and teaching–coaching abilities in students.

With the exception of the desire for learning dimension, the total nursing competency dimension was in turn related to two dimensions of the SDLR. Generally, desire for learning, which is used to determine the motivation of students for learning and whether they are able to reflect on this motivation, is the foundation of SDL. Only students with a desire for learning can engage in learning using the available resources, and monitor and regulate the strategies they use to assist themselves in conscious learning. However, it appears that our findings do not support this view. One explanation could be that learning motivation is less important in the relationship between SDL and nursing competency. With self-control and self-management, students can also engage in SDL well enough to acquire basic nursing knowledge, skills, and behaviors.

A limitation of the study is that due to its convenience sampling nature, the individuals who chose to participate in this study may not be reflective of all nursing students; hence, the results cannot be generalized. Meanwhile, the two instruments are self-reported measurement tools that may lead to the potential for bias.

5. Conclusions

The results have important implications for baccalaureate nursing education. The ability of SDL will not be enhanced simply because the content is read. Adding SDL components to the nursing curricula is essential. The motivation to learn is less important when it refers to improving nursing competency.

Conflicts of interest statement

The authors declare no conflicts of interest.

Acknowledgments

REFERENCES

[1] McGregor RJ. A framework for developing staff competencies. J Nurs Staff Dev 1990;6:79–83.

[2] Anema MG, McCoy J. Competency-based nursing education. New York: Springer; 2009.

[3] Axley L. Competency : a concept analysis. Nurs Forum 2008;43:214–22.

[4] Fisher M, King J, Tague G. Development of a self-directed learning readiness scale for nursing education. Nurse Educ Educ Today 2001;21:516–25.

[5] Reio T. Prior knowledge, self-directed learning readiness, and curiosity: antecedents to classroom learning performance. Int J Self-Directed Learn 2004;1:18–25.

[6] Du ZM. Sampling survey and SPSS application. Beijing: Publishing House of Electronics Industry; 2010.

[7] Beauvais AM, Brady N, O'Shea ER, Griffin MT. Emotional intelligence and nursing performance among nursing students. Nurse Educ Educ Today 2011;31:396–401.

[8] Wang W, Cheng Y, Bai JJ, Zhang Y, Wu JQ. Reliability and validity of Chinese version of the self-directed learning readiness scale for student nurse. Chin J Nurs 2010;45:63–5.

[9] Liu M, Kunaiktidul W, Senaratana W, Tonmukaykdul O, Eriksen L. Development of competency inventory for registered nurses in the People's Republic of China: scale development. Int J Nurs Stud 2007;44:805–13.

[10] Dyck S. Self-directed learning for the RN in a baccalaureate program. J Contin Educ Nurs 1986;17:194–7.

[11] Wang W, Cheng Y, Yuan HB, Bai JJ, Wu JQ, Zhang Y. The student nurses' self-directed learning readiness and its influential factors. Chin J Nurs 2010;45:335–7.

[12] Yuan HB, Williams BA, Fang JB, Pang D. Chinese baccalaureate nursing students' readiness for self-directed learning. Nurse Educ Today 2012;32:427–31.

[13] Kocaman G, Dicle A, Ugur A. A longitudinal analysis of the self-directed learning readiness level of nursing students enrolled in a problem-based curriculum. J Nurs Educ 2009;48:286–90.

[14] Wu F, Ye M, Dai Y, Liu J, Zhang B. The study on core competency of registered nurses in different length of working time. Chin J Pract Nurs 2010;26:15–7.

[15] Liao X, Wu R, Li L, Xu H, Wu J. Comparison of core competency for health care between nursing undergraduates and junior registered nurse with bachelor degree. J Nurs (China) 2011;18:33–6.

[16] Zhang SW, Jiang XY, Xiao HM, Zhang X, Lin Y. A study of application of the discovery learning in experimental nursing research curriculum. J Fujian Med Univ – Soc Sci Educ 2013;14:42–6.