



## Original article

Comparison of clinical thinking ability in nursing students of different grades<sup>\*</sup>Jun-Yan Song, Xiu-Li Zhu, Cui-Ping Liu, Xiu-Xin Miao<sup>\*</sup>, Xue-Zhu Lin, Hui-Li Guo, Chi Tang

Nursing College of Qingdao University, Qingdao, China

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## ABSTRACT

**Objective:** This study investigated and compared the clinical thinking ability of undergraduate nursing students of different grades, and searched for influencing factors of clinical thinking ability of nursing undergraduate students.

**Methods:** The convenience sampling method was used to select the Subject of the study. In total, 180 third-year, fourth-year, and fifth-year nursing undergraduate students were enrolled in this study. A self-designed scale of clinical thinking ability was used to collect the data. SPSS17.0 was used to analyze the data.

**Results:** The average scores of clinical thinking ability of undergraduate nursing students were  $68.14 \pm 9.13$ . in addition, 71.1% of the students have a higher level of clinical thinking ability, and only 7.2% of the students have the best level. The ANOVA test showed that the fourth-year students had the highest scores ( $72.96 \pm 8.64$ ), and the third-year students had the lowest scores ( $62.35 \pm 8.09$ ), which indicated a significant difference in the scores of the three groups ( $F = 26.79$ ,  $P < 0.05$ ). Multiple linear regression analysis indicated that the frequency of academic activities and the frequency of department rounds were significantly correlated to clinical thinking ability ( $P < 0.05$ ).

**Conclusion:** We must pay attention to the changes and influencing factors of clinical thinking ability of nursing undergraduate students. Thus, traditional teaching methods need to evolve and be revised to host the capacity of clinical practice most effectively and, eventually, promote the development of clinical thinking ability of nursing undergraduate students.

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## 1. Introduction

Clinical thinking is one of the ways of thinking that is the most crucial function of thinking. According to Huang Jing, clinical thinking ability of nursing is the judgment and decision-making ability in nursing work. It can be used to identify the existing and potential nursing problems of the patient.<sup>1</sup> Clinical thinking ability is the imperative premise and foundation of holistic nursing and is the key factor to the entire nursing process, which is required to carry out clinical nursing work. It is also the bridge between nursing clinical thinking and practice.<sup>2</sup> Clinical thinking ability is a skill that has been identified internationally as an important

educational outcome of the undergraduate nursing program and it is also an important part of medical education.<sup>3</sup> Previous studies have utilized descriptive analysis to evaluate the clinical thinking ability of undergraduate nursing students. This study was performed to compare and analyze the differences among different grades and to evaluate the clinical thinking ability of undergraduate nursing students to provide a scientific basis for nursing education reform.

## 2. Subjects and methods

## 2.1. Survey subjects

The convenience sampling method was used to select 180 nursing undergraduate students. The students were all from the nursing college of Qingdao University. The survey included three grades: third-year students, fourth-year students and fifth-year students. Each grade had 60 students.

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\* Corresponding author.

E-mail address: [xxmiao8186@sohu.com](mailto:xxmiao8186@sohu.com) (X.-X. Miao).

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## 2.2. Methods

### 2.2.1. Tools for investigation

The questionnaire included two components. The first component was about demographic characteristics, which were based on abundant literature relevant to the topic.<sup>4,5</sup> The content of the questionnaire included: gender, age, birth place, the situation of practice, the frequency and content of the department of professional study, the frequency and content of the hospital professional study, the frequency of the department ward round, the frequency of the case discussion, the situation of the participant in academic activities, etc.

The second component was the scale of clinical thinking ability, which was derived from a consensus definition of clinical thinking ability from Delphi research. The scale consisted of three primary dimensions, which included critical thinking ability, systematic thinking ability, and evidence-based thinking ability.<sup>6,7</sup> The participants were asked to rate each statement on a 5-point Likert scale (from best = 5, to worst = 1). The higher the score, the higher the level of clinical thinking. A score below 40 indicated a low level of clinical thinking ability. A score of 40–60 indicated an average of clinical thinking ability. A score above 80 indicated a high level of clinical thinking. Throughout the expert evaluation, the content validity (CVR) of the questionnaires was 0.89. The reliability of the scale was 0.91, and the retest reliability was 0.84. These findings showed that the scale exhibited good reliability and validity, and can be used for further study.

### 2.2.2. Data collection and analysis

The purpose of the survey was explained to the nursing students when the questionnaires were distributed, and the students were asked to anonymously fill in the questionnaires. In total, 180 questionnaires were distributed, and 180 valid questionnaires were returned. The effective recovery was 100%.

### 2.2.3. Statistical methods

Statistical Package for the Social Science (SPSS) 17.0 for windows was used for the statistical analysis. The percentage was used to analyze the general characteristics, and the mean score and standard deviation (SDs) were calculated to analyze the students' clinical thinking ability. The scores of clinical thinking ability among the three groups were compared using the Analysis of Variance (ANOVA) method. Alpha was established at 0.05 for each statistical analysis.

## 3. Results

### 3.1. General information of undergraduate nursing students

The demographic data of the undergraduate nursing students are shown in Table 1. A total of 180 students participated in the study; 83.9% of the participants of the study were female and 29.0% were male. The mean age was  $22.2 \pm 2.30$  years. The participants were classified into 3 groups by age: 20–21 years, 22–23 years, and 24–25 years. Subjects aged 22–23 years constituted the largest portion (59.4%) of the sample population. Moreover, 83.3% of the participants were from Shandong province and 16.7% were from elsewhere. Furthermore, 79.4% of the participants came from the countryside and 20.6% were from the city. In addition, 32.8%, 40.6%, and 26.6% of the participants thought they had an introvert personality, extrovert personality, and in-determination, respectively.

### 3.2. Overall situation in undergraduate nursing students of clinical thinking ability

The total scores of clinical thinking ability are presented in Table 2. When the clinical thinking levels of the students were considered, the scores of the clinical thinking ability were  $68.14 \pm 9.13$ . Students with scores above 60 were considered to have high levels of clinical thinking ability. Moreover, 78.3% of the students ( $n = 167$ ) had high clinical thinking ability levels.

### 3.3. Comparison among undergraduate nursing students of different grades of clinical thinking ability

The overall clinical thinking ability scores of the 3 groups are presented in Table 3. An ANOVA test showed that the fourth-year students had the highest scores ( $72.96 \pm 8.64$ ) and the third-year students had the lowest scores ( $62.35 \pm 8.09$ ), which indicated a significant difference in the scores of the three groups in this section. The LSD test was used to compare the scores of every two groups. These results showed that there were significant difference between every two groups.

### 3.4. Influencing factors of clinical thinking ability of nursing students

The factors of clinical thinking ability are presented in Table 4. Multiple linear regression analysis revealed that the clinical thinking ability score was a dependent variable, and single factor

**Table 1**

Demographic profile of undergraduate nursing students (n, percentage).

Demographic	Third year students (n = 60)	Fourth year students (n = 60)	Fifth year students (n = 60)	Total (n = 180)
Gender				
Male	6 (10.0)	14 (23.3)	9 (15.0)	29 (16.1)
Female	54 (90.0)	46 (76.7)	51 (85.0)	151 (83.9)
Age (yrs.)				
20–21	34 (56.6)	16 (26.6)	1 (1.7)	51 (28.3)
22–23	26 (43.3)	43 (71.7)	38 (63.3)	107 (59.4)
24–25	0 (0.0)	1 (1.7)	21 (35.0)	22 (12.2)
Native place				
Shandong	51 (85.0)	49 (81.7)	50 (83.3)	150 (83.3)
Other place	9 (15.0)	11 (18.3)	10 (16.7)	30 (16.7)
Place birth				
Countryside	44 (73.3)	52 (86.7)	47 (78.3)	143 (79.4)
City	16 (26.7)	8 (13.3)	13 (21.7)	37 (20.6)
Character				
Introvert	18 (30.0)	24 (40.0)	17 (28.3)	59 (32.8)
Extrovert	26 (43.3)	23 (38.3)	24 (40.0)	73 (40.6)
In-determination	16 (26.7)	24 (40.0)	19 (31.7)	48 (26.6)

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