

Nursing Student's Critical Thinking Skills in Tabriz Nursing and Midwifery Faculty

¹Nafea Ali Reza, ¹Lakdizaji Sima, ²Oshvandi Khodayar, ³Fathi Azar Eskandar and ⁴Ghojazadeh Morteza

¹Faculty of Nursing and Midwifery, University of Tabriz Medical Science, Iran

²Faculty of Nursing and Midwifery, University of Hamadan Medical Science, Iran

³Department of Psychology, Tabriz University, Iran

⁴Department of Psychology, Tabriz Azad University, Iran

Abstract: Critical Thinking (CT) is the life-blood of all educational programs. Today critical thinking is an expected competency of nurses at all levels of education and practice. This study has conducted to compare the critical thinking skills of nursing students enrolled in a 4-year baccalaureate program in Tabriz nursing and midwifery faculty. By cross-sectional design data collection occurred during regularly scheduled classes. A volunteer convenience sample of 172 students from all 4- years baccalaureate program completed a questionnaire of the California Critical Thinking Skills Test (CCTST). All data was analyzed by using descriptive statistics methods, mean difference tests and correlation test. Mean CT scores of Freshman II students in a baccalaureate 4-years (regular course) nursing program was 10.23 ± 3.18 and for Seniors II students was 10.52 ± 3.44 . There were no statistically significantly differences between 2 groups' students. On the other hand the mean CT scores of freshman students (evening courses) was 9.78 ± 2.90 and for Seniors II students was 9.23 ± 2.63 . There was no statistically significant difference between them. Indeed there was no statistically significant difference between morning courses nursing program and evening courses in total mean scores of CCTST too. Findings didn't demonstrate significant correlation between factors such as age, gender, courses with the total score of CCTST. Considering no significant difference in total mean of CCTST, it is recommended that nurse educators apply new and variety of teaching strategies to foster CCTST.

Key words: Critical thinking, nursing education, nursing student

INTRODUCTION

Critical thinking is the life-blood of all educational programs. The education literature overwhelmingly conveys the value of development in critical thinking abilities in students (Green, 2000). Most rationales convey arguments for the importance of thinking abilities: they lead to getting a better job, to the nation being able to compete better economically, to people being able to fit better within a changing and complex environment, to improve the quality of life (Jamie and Robert, 1995). Weiss (1993) indicated that teaching faculty in all disciplines and at all levels of education shared a common goal: To develop students in the complex mental operations that will allow them to be successful in the classroom as well as their future careers. Nurses apply a basic core of knowledge to each new client situation. In an academic discipline (e.g., mathematics, problems are well structured and the right answer can usually be found by applying the right theory or formula, but in an applied discipline (e.g., nursing), problems are messy and confusing. There

may be insufficient or conflicting data, an unknown cause and no single "correct" or "best" answer or solution. To manage such problem you must know how to identify knowledge and data gaps, find and use new information and initiate and manage change. All of these skills require critical thinking (Green, 2000).

The concept critical thinking is derived from the roots in ancient Greek. The word 'critical' derives etymologically from two Greek roots: "Kriticos" meaning, discerning judgment and "Kriterion" meaning standards. Etymologically, the word implies the development of "discerning judgment based on standards". Critical thinking as an integral educational outcome of learning drives all the educational programs and assessment methods towards this ideal. Throughout the critical thinking literature the multiplicity of definitions has proved problematic. In 1987 these varying definitions acted as a catalyst for the American Philosophical Association to recruit Peter Facione, a prominent philosopher and writer in the field of critical thinking, to head a systematic inquiry into the current state of

critical thinking and critical thinking assessment. Facione convened a panel of expert theoreticians representing several academic disciplines throughout the United States and Canada. An outcome of the panel's activities and deliberations was the formation of an important consensus in relation to the concept of critical thinking intended to guide curriculum development, instruction and assessment. This consensus was acknowledged by the American Philosophical Association in 1990 and called the Delphi Report (Simpson and Courtney, 2002). A construct of critical thinking based on a 1990 American Psychological Association Delphi Report defined it as purposeful, self-regulatory judgment that gives reasoned consideration to context, evidence, concepts, methods and standards in deciding what to believe or what to do (Donald *et al.*, 2004).

The requisite cognitive critical thinking skills are essential to being a good critical thinker. The concept of critical thinking is also associated with a set of personal attitudes or dispositions that can be used to describe an individual who is inclined to use critical thinking. The cognitive critical thinking skills as applied to nursing and the care of the patient can be understood as:

Interpretation: Accurately interpreting problems as well as objective and subjective data from common information sources.

Analysis: Examining ideas/arguments in problems, objective and subjective data and possible courses of action.

Inference: Querying claims, assessing arguments (recognizing faulty reasoning) and reaching conclusions which are appropriate.

Explanation: Clearly explaining and defending the reasoning in which an individual arrives at specific decisions in the context of the health care of the patient.

Evaluation: Evaluating information to ascertain its probable trustworthiness as well as its relevance.

Self-regulation: Constantly monitoring one's own thinking using universal criteria, for example, clarity, precision, accuracy, consistency, logicalness, significance and correcting oneself as appropriate (Facione, 1997). The interest in this construct are related to the following issues: The increasing interest in critical thinking in education, instructional methods to develop critical thinking in nursing education and a rapidly changing health-care arena (Daly, 1998).

The increasing interest in critical thinking within education has come to the forefront in nursing following the mandate by the National League of Nursing (1992), which stated that nursing programs must measure critical thinking as an outcome criterion for accreditation (National League for Nursing, 1992). It is a concept currently being used in nursing education and practice as an essential core skill in professional development (Lenburg, 1997). Health care organizations have made dramatic advances and changes over the last few decades resulting in rapid technological advances and theory and the associated ethical and moral dilemmas which are part of the daily practice of nurses. Some of the significant changes and advances facing nurses are the expansion in technology, decreased length of stay in hospitals, an ageing population, complex disease processes and increased patient acuity. More marked changes are predicted in the coming decades, for example, technology prolonging an individual's life-span which increasingly compounds the ageing population and increases the burdens of the healthcare expenditure. If nurses are to deal effectively with complex change, increased demands and greater accountability, they must become skilled in higher level thinking and reasoning abilities (Simpson and Courtney, 2002).

To meet the complex clinical situation of the new millennium, nurse educators need to reorientation of nursing programmers from merely focusing on nursing knowledge to a broad range of lifelong learning. Some countries have recognized the need for this reorientation and have cited Critical Thinking (CT) as a vital outcome of the higher education core curriculum (IP, 2000). The nursing literature reports various techniques used to develop critical thinking and nurse educators face many challenges when teaching this concept-success requires creative strategies. Bittner and Tobin indicated that instructional methods to enhance critical thinking should include creative approaches to open nurses' minds, broaden and augment their ways of thinking and facilitate the process of problem solving. The nurse's problem solving demonstrated at the bedside is invaluable to patient care (Simpson and Courtney, 2002). Nurse educators realize the importance of teaching critical thinking skills to students and are aware that these skills can be developed by devising teaching methods that stimulate higher-level thinking in theory and practice (Weis and Guyton-Simmons, 1998). Although, many studies have explored various strategies to enhance critical thinking abilities but there are few studies that examine and comparison the critical thinking skills of 4-year baccalaureate program in Tabriz Nursing and Midwifery Faculty. Therefore, the purpose of this study

is comparison of critical thinking skills of 4-year baccalaureate program in Tabriz Nursing and Midwifery Faculty.

MATERIALS AND METHODS

A cross-sectional descriptive design used to study nursing students critical thinking skills which allowed for the simultaneous collection and examination of data from four groups of students enrolled in years 1-4 of a baccalaureate program in autumn 2006 in Tabriz Nursing and Midwifery Faculty, Tabriz, Iran. The convenience sample was 182. However, only 172 students completed the questionnaire. The participants were informed of the purpose of the study and were assured of confidentiality and anonymity. Participation in the study was voluntary and they were advised of their right to obtained written consent obtained.

The CCTST and a background/demographic questionnaire were used to collect the data in this study. The CCTST consists of 34 questions, each with 4 or 5 response options which one was correct (Facione and Facione, 1990). The test should be completed in 45 minutes. Each correct response was assigned one score; therefore, scores can range from 0-34, with higher scores reflecting stronger CT Scores. The CCTST produces a total score and five subscales scores, which are: Analysis, evaluation, inference, deductive reasoning and inductive reasoning. In this study based on Kuder Richardson 20 reliability was 0.63.

All data gathered from this study was analyzed by using descriptive statistics methods, mean difference and relation tests.

Data analysis: Data were analyzed using the SPSS 13.0 for Windows versions. Both descriptive statistics (mean scores, standard deviations, minimum and maximum scores, percentages) and statistical analyses (ANOVA, T-TEST and Pearson correlation) were used. In order to assess changes of critical thinking skills over 4 years of education we applied ANOVA statistical test, differences between two morning and evening courses were tested by *t*-tests. The relationship of critical thinking of students with age was tested by Pearson product-moment correlations. The a priori level of statistical significance was 0.05. Statistical analyses were performed using the Kolmogorov-Smirnov test for normal distribution.

RESULTS

Table1 presents the summarized data of students' demographic characteristics.

Table 1: Demographic characters of sample

Demographic characters		Frequency	%
Sex	Male	42	24.4
	female	130	75.6
Age (year)	≤20	46	30.5
	21-22	58	38.4
	23-24	36	23.8
	25≤	11	7.3
Marital status	Single	148	90.2
	Married	16	9.8
Course	Morning	90	52.6
	Evening	82	47.9
Total	172	100	

Table 2: Comparison of critical thinking skills among two courses in different years

Course year	Morning Mean±sd	Evening Mean±sd
Freshman II	10.23±3.18	9.78±2.90
Sophomore II	11.37±3.46	9.22±2.27
Juniors II	10.56±3.16	10.74±2.90
Seniors II	10.52±3.44	9.23±2.00
Statistical significances	F = 0.46, p = 0.70	F = 1.39, p = 0.25

The total Mean scores increased from Freshman II to seniors II with the exception of Juniors II in the regular course. The results of t-test indicated that there were no statistically significant differences among morning course students (Freshman II, Seniors II) on the total score and sub-scale scores, with the exception of the score on deductive reasoning that was statistically significant ($t = 2.38, p = 0.02$). Also there were not statistically significant differences among regular and evening course students on the total score ($t = 1.87, df = 170, p = 0.06$). Our findings demonstrate no significant relationship between the total scores of CCTST and factors such as age, gender and courses in samples.

ANOVA Test was used to compare the total scores of CCTST among morning course students and evening course students. The results indicated that there were no statistically significant differences among the four groups of 2 courses (Table 2).

DISCUSSION

The aim of this study was comparison of students' critical thinking skills as they progressed through a baccalaureate nursing program. This study could not identify the impact of gender, age, courses of nursing students on the scores of CCTST. In the majority of areas of critical thinking, regardless of the year in their educational program, all the scores for the sub-scales and total score of the present study were lower. The mean of CCTST scores did not have statistically significant difference among morning and evening course students in the 4 years of the program. A similar study used a

cross-sectional design to compare CCTST scores of first year and last year nursing students at the Iran University in Tehran (n = 172). No differences were found in CCTST scores of first year and last year nursing students (Islami *et al.*, 2004). Another study investigated changes in CT skills students enrolled in a baccalaureate midwifery program in Universities of Beheshti and Azad in Tehran city which didn't show statistically significant difference among midwifery students (p = 0.64) (Mirmolaie *et al.*, 2003). Contrary to the findings of this study, another study's results had statistically significant difference among nursing students (n = 107, t = 4.28, p = 0.01) (Khalili *et al.*, 2003). The CCTST has been used with conflicting results. In a pre-post study of 3 cohorts of baccalaureate nursing students (n = 55, 55 and 73, respectively), gains were noted in one cohort who had completed a new curriculum that stressed CT. A second cohort who completed a similar curriculum showed no gains in CCTST scores. Also using a pre-post test design, Spelic *et al.* found statistically significant improvement in overall CCTST scores of students enrolled in all tracks, traditional (n = 51), accelerated second bachelors (n = 68) and RN-BSN (n = 17) (Lisa and Catherine, 2006). Using a cross-sectional design, Profetto- McGrath investigated changes in CT skills and dispositions using the CCTST and CCTDI among students enrolled in a baccalaureate nursing program in Canada (n = 228). Mean CCTST scores showed no significant increases from years 1-4, with the exception of year 3. McCarthy found significant increases in CCTST and CCTDI scores from the sophomore to senior years (Profetto and McGrath, 2003). The CCTST requires no discipline-specific knowledge, but is set in contexts familiar to college-aged students or older. It does not specifically assess a student's ability to apply their skills in nursing contexts (Islami *et al.*, 2004). In this study, mean CCTST scores did not increase during the baccalaureate program. Many explanations may account for the failure to demonstrate significant improvement in critical thinking in this research, including:

- The tool of critical thinking is not specific or is insufficiently sensitive to actual changes.
- The length, power, or focus of instruction is insufficient to produce changes (i.e., it needs to be continued for a longer period of time).
- Critical thinking is a fixed trait not subject to improvement, especially in adults.
- Nursing instruction has not been adequately developed to cause improvement in critical thinking (Christine, 2005). Other factors such as instruction, amount of direction provided, openness conveyed by nurse educators, cultural background, low student motivation, Limited teaching strategies,

limited clinical learning approaches and learning styles are also crucial in CTS and cognitive development.

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