

Original Article

## The relationship between critical thinking dispositions and academic achievement in Iranian midwifery students

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### ABSTRACT

**Background & Aim:** Students' academic achievement is one of the important indicators in the assessment of higher education. Applying critical thinking in education is a significant factor affecting the growth and development of the students. This study was performed in an attempt to determine the relationship between critical thinking dispositions and academic achievement in midwifery students of Mashhad University of Medical Sciences, Iran, in 2014.

**Methods & Materials:** This correlation study was conducted on 60 midwifery students of Mashhad School of Nursing and Midwifery in 2014. All eligible students were recruited in this study. Data collection instruments included demographic and academic achievement form and the California Critical Thinking Disposition Inventory. Collected data were analyzed by descriptive statistics tests and Pearson correlation coefficient using SPSS software version 16.

**Results:** The mean and standard deviation (SD) of the total score of critical thinking dispositions were  $260.10 \pm 38.18$ . The mean (SD) grade point average of students was  $16.31 \pm 1.05$ . The results of Pearson correlation test showed no significant relationship between the total and subscales scores of critical thinking and academic achievement ( $P > 0.05$ ).

**Conclusion:** The results of this study indicated that there was no significant relationship between the critical thinking dispositions and its subscales with academic achievement.

### Introduction

The academic achievement of students is one of the important indicators in the assessment of higher education and achieving it requires students' effort in learning (1, 2). Academic achievement includes the extent to which students reach the estimated goals which they are expected to in their efforts (3). Consequently, the educational system is recognized to be succeed when the academic achievement of the stu-

dents reaches the highest rate at different levels (4). Students educational progress play an important role in their future success and lack of enough attention to this fundamental subject and as a result academic failure can lead to decrease their scientific and practical efficacy in society. In addition to problems which academic failure can cause for students and their families, it also causes substantial losses to society. Because of wasting significant amounts of facilities, human and economic resources and potential, it has reversible effects on the individual and social dimensions (5). Academic achievement depends on various factors including individual, social, educational, didactic, and psychological. Evaluation of these factors and its roles in academic

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achievement can lead to find resolutions to recognize the factors affecting academic progress and failure and that can help education programmers to improve positive effective factors and reduces negative ones (6). Critical thinking improves decision-making the ability of clinical staffs to choose the best nursing procedures (7). Thinking is the process in which a person tries to identify a problem and solve it according to past experiences; thinking opens the way for further education. Accurate and effective thinking is process in which the sense, memory, and imagination are in balance and these abilities focus on the goal. There are many types of thinking such as critical, creative, logical, intuitive, practical and others, among them, critical thinking is the most important one. Critical thinking is the process of skillfully conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from or produced through observation, analysis, logical interpretation and reasoning (8). Critical thinking in clinical fields as midwifery is a vital element (9). Midwifery students, as the persons who will soon be involved in the health care system, need to have certain capabilities such as decision making, problem solving and self-efficacy skills which are all influenced by critical thinking (10-12). Critical thinking is one of the highest cognitive activities, and combining this capacity with specialized knowledge of midwifery can improve clinical performance and provide high-quality obstetric care leading to reduced maternal and infant mortality (6, 13). A critical thinking is a purposeful and rational kind of thinking that is mainly based on the outcome. Although critical thinking, the person accepts certain standards for thoughts on a regular basis. Then, he evaluates and guides the thoughts in accordance with those standards (13). Critical thinking is an integral part of training at all levels of education. People with critical thinking analyze the situation creatively and eventually select the best solution in the most effective way (6, 14). Critical thinking consists of two aspects: skills and disposition. Skills emphasize the cognitive strategies and the attitude focuses on the critical parts of thinking as well as the internal, sustainable motivations in problem solving (15, 16).

Critical thinking skills are a variation of

cognitive skills. Ideally, a critical thinker needs to possess such skills in dealing with the matters of life, complex issues and difficult questions and problems. Without an emotionally positive attitude toward critical thinking, this kind of thinking does not occur. Therefore, critical thinking disposition is a vital part of critical thinking (16, 17).

The study results of Ranjba and Esmaili (18) showed that “nursing and midwifery students did not pay enough attention to critical thinking disposition in nursing education in different levels and in order to reform the educational patterns, the importance of critical thinking is necessary to be considered.” Sabouri Kashani et al. (19) showed that “critical thinking disposition of medical students was positive and average.” It seems that to promote critical thinking disposition of students, educational systems need to be revised. Promotion of critical thinking disposition and problem solving anxiety in combination with specialized knowledge of midwifery in students can lead to improved clinical turnover and provide high-quality obstetric care and reduced maternal mortality. Although it seems to pay less attention to critical thinking disposition in the midwifery education program which can be a barrier, for developing students in this field generally. Thus, research on critical thinking disposition can result in reinforce strengths and eliminate weaknesses. Besides, it can attract attention of teachers and program managers to the importance of evaluating critical thinking disposition.

## **Methods**

This correlation study was conducted on the midwifery students of Mashhad School of Nursing and Midwifery in 2014. All midwifery students of the 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> semester (N = 60) in Mashhad School of Nursing and Midwifery who were studying in the first semester of 2013-2014 were included. Data collection tools included demographic and academic form and the California Critical Thinking Disposition Questionnaire. Academic and demographic characteristics were age, being a native or non-native student, educational concessions, and marital status. Academic achievement was evaluated by the

grade point average (GPA) at the end of the academic term. The validity of the academic form was confirmed by content validity so that the newest articles on the research topics were reviewed and adjusted under the supervision of teachers and advisors. The California Critical Thinking Disposition Questionnaire consists of 75 questions which are scored with Likert scale ranging from strongly disagree, mostly disagree, disagree, agree, somewhat agree, and strongly agree containing one to six points according to the guidance questionnaire. The questions account for seven subscales of seeking the truth (12 questions), acceptance of criticism (12 questions), power of analysis (11 questions), the power of information organization (11 questions), confidence (9 questions), the rate of development (10 items) and searching (10 questions). The minimum score is 70, and the maximum score is 420. Scores higher than 350 indicate a strong and stable disposition, between 280 and 350 represent the average positive disposition, between 279 and 211 represent an unstable disposition and scores fewer than 210 are indicative of a completely negative disposition. The content validity of the California Critical Thinking Disposition A questionnaire was confirmed by internal and external studies and the reliability was confirmed by pilot study, through using Cronbach's alpha coefficient 0.90 (6, 16). This study was approved by the ethics committee with the code of 900 217 and its objectives were clarified and reported to this committee. Furthermore, written consents were obtained from the students and following that data gathering was done. The demographic and academic data were collected by interviews, and the California Critical Thinking Disposition Questionnaires were also completed by the students within 20 minutes (during non-school hours). The collected data were analyzed by SPSS software version 16 (SPSS, Inc., Chicago, IL, USA) using descriptive statistics tests and Pearson correlation coefficient. Initially, to determine the normality of the quantitative variables, we used the Kolmogorov-Smirnov test. Afterward, the data were analyzed. In all tests,  $P < 0.05$  was considered statistically significant.

## Results

The mean [standard deviation (SD)] age of students was  $23.41 \pm 1.08$  years. The mean (SD) GPA of students was  $16.31 \pm 1.05$ . Approximately, 63.3% of the students were single. Interest in the field of midwifery in the majority of students (54.7%) appeared to be moderate (Table 1).

**Table 1.** Frequency of distribution in midwifery students

Variables	N (%)
Marital status	
Single	38 (63.4)
Married	22 (36.6)
Total	60 (100)
Interest in the field	
High	22 (36.6)
Average	33 (55)
Low	5 (8.3)
Total	60 (100)
Region quota	
One	28 (46.6)
Two	13 (21.6)
Three	19 (31.6)
Total	60 (100)
Nativity	
Yes	33 (55)
No	27 (45)
Total	60 (100)

Moreover, no significant relationship was found between the demographic and academic variables of age, region quotas and the subjects' nativity and academic achievement ( $P > 0.05$ ).

The total critical thinking disposition mean score was  $260.10 \pm 38.18$ . Critical thinking disposition was strong and stable in 1.9%, positive in 26.4%, unstable in 60.4% and negative in 11.3% of the subjects.

The results of Pearson correlation test revealed no significant relationship between total and subscale critical thinking scores, and academic achievement ( $P > 0.05$ ) (Table 2).

## Discussion

The results of this study indicated that critical thinking disposition appears to be unstable in the majority of the students. Barkhordary et al. (7) and Ip et al. (20) also believed that critical thinking disposition is rather unstable in the majority of students. Their findings are consistent with the results of the present study.

**Table 2.** Correlation of critical thinking disposition and its subscales with academic achievement in the studied students

Variables	Mean ± SD	Correlation coefficient	Significance level
Seeking the truth	6.91 ± 44.50	0.083	0.558
Acceptance of Criticism	7.85 ± 41.05	-0.072	0.614
Analysis power	6.90 ± 37.85	0.02	0.891
Organization power	7.94 ± 41.30	0.031	0.825
Self-confidence	6.72 ± 33.18	-0.038	0.789
Searching	6.58 ± 30.43	0.163	0.249
Development	8.31 ± 31.58	0.014	0.922
Total	38.18 ± 260.01	0.037	0.794

SD: Standard deviation

In another study, Shin et al. (21) performed a longitudinal study on 32 nursing students aimed to assess critical thinking during the 4 years of education (from the 1<sup>st</sup> year to the 4<sup>th</sup> year of university). They found that students' critical thinking disposition was positive. This inconsistency with our results might be due to the continuous evaluation of students' critical thinking disposition by academic year (from the 1<sup>st</sup> year to 4<sup>th</sup> year students). However, in the present study, critical thinking has been evaluated just for one time. The results of the study of Suliman and Halabi (22) on 165 nursing students in the 1<sup>st</sup> and the 4<sup>th</sup> year of university showed that critical thinking disposition of students was positive. This inconsistency with the results of the present study can be explained by differences in learning environments, teaching methods and cultural differences. Furthermore, the results of this study indicated no significant relationship between academic achievement and critical thinking dispositions and its subscales. Emir in a study to determine whether education students' critical thinking disposition differ according to academic success or not. Academic achievement showed not significantly different (23); their findings are consistent with the results of the present study.

The results of Ghazivakili et al. (24) on 216 students of Alborz University showed that the critical thinking, the learning styles, and academic performance are significantly associated with one another. The results of Nasrabadi et al. (25) on 180 students of Isfahan University showed that there was a positive relationship between critical thinking reflection attitude and academic achievement. Inability in problem solving and analysis of critical dispositions is due to low ability of students in evaluating ideas

and diagnosing arguments. On the other hand, the lack of questioning and curiosity and probably being suppressed in learning environment can be an obstacle to the development of ideas and critical thinking dispositions and ones who have critical thinking, cannot be progress in such an environment to develop students' attitude and dispositions requires the active participation of students. In Iran, the current midwifery education program is based on a traditional lecture way of teaching using power point presentation. This teaching method, focuses on conveying information and students have limited opportunities to discuss and exchange ideas (6, 26). Hence, the less intellectual engagement and more superficial information are processed (27). Another reason to explain these findings can be that these students were interested in analytical tests, while final exams at university were not the same level and were more mnemonic (memory work) to evaluate the students level. As a result the students with higher-level of mnemonic ability gained higher scores (3). The results of the study of Yadollahi et al. (6) on medical students revealed that the amount of educational materials as well as the methods of evaluation frequently affect the development of critical thinking. In this regard, large amounts of educational materials seem to not provide adequate thinking opportunities for the students. In addition, the evaluation methods which are based on memorizing large volumes of theoretical and non-functional information cause students to be attracted to the mnemonic techniques with limited thinking and reasoning. The results of this study indicated that there was no significant relationship between the critical thinking disposition and its subscales with academic success.

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### Conflict of interest

The authors declare no conflict of interest.

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