



Anxiety and Critical Thinking Skills in Nursing Students

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Authors' contributions

This work was carried out in collaboration between all authors. Authors RR and SS designed the study, wrote the protocol and supervised the work and wrote the first draft of the manuscript. Author HSN performed the statistical analysis and managed the analyses of the study. Authors SM and ZB carried out all laboratories work and managed the literature searches and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Background and Purpose: Critical thinking skill is one of the important goals of nursing education and its promotion is considered one of the expected outcomes of university studies. Thus recognition of its facilitators and barriers is an important step toward increasing the quality of nursing education. The current study was conducted to investigate critical thinking skills disposition and the relationship between anxiety and critical thinking skills in nursing students.

Materials and Methods: This descriptive analytical study was conducted on all nursing students of Faculty of Nursing and Midwifery in Amol, affiliated to Mazandaran University of Medical Sciences, Iran. The samples were selected by census method of all students studying in the second semester of academic year 2013. The research instruments used in critical thinking skills test were Watson-

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Glaser Critical Thinking Appraisal (A) and the Spielberger's state anxiety inventory.

Findings: In this study, the mean and standard deviation of critical thinking and anxiety score of all students were (M=44.38, SD=5.60) and (M=33.22, SD =5.31) that indicates poor critical thinking skills and moderate downward anxiety in these students. In this study, correlation between anxiety and the score of students' critical thinking was significant (P=0.001 and r=-0.672).

Conclusion: The results of the current study showed poor critical thinking skills in nursing students and significant inverse correlation between anxiety and critical thinking skills such that individuals with low anxiety compared to individuals with high anxiety had more desirable critical thinking.

Keywords: Critical thinking skills; anxiety; nursing students.

1. INTRODUCTION

Critical thinking is one of the important words in present time as everyday people are exposed to decision making related to important social or personal issues. Critical thinking skill is also necessary because it helps achieve university studies' important objectives including the development of psychological dimensions, transfer of knowledge and prepare the individual for a productive life [1]. This skill is also an important part of nursing education. The process of critical thinking increases the ability of nurses to identify clinical indicators, evaluate the important issues and discuss on how to improve conditions [2]. Decision making based on critical thinking increases the domination of nurses on the critical conditions and enhances the quality of nursing care. The lack of critical thinking and its consequent lack of self-confidence will increase the gap between information and performance, and cast more doubt on the ability of nurses in a critical situation [3]. As nurses also play managerial roles, their urgent need to this skill is more evident than before [4] because when nursing managers enjoy critical thinking, they will provide more positive work environment that leads to personnel's higher job satisfaction and their higher performance [5]. Critical thinking empowers nurses in providing proper nursing care [6], and may affect their self-confidence and perceived anxiety [7] and consequently their mental health [8]. Different studies have reported increased anxiety in nursing students and other medical students since the time of education [9,10]. Three important stressors in these students are factors related to the university studies (inappropriate method of study, the high volume of assignments, fear of failure in courses etc), clinical factors (inadequate knowledge and insufficient clinical experience, fear of mistake in providing care, fear of infectious diseases, etc), and personal and social factors (lack of self-confidence, marriage, financial factors, etc).

[10,11]. The prevalence of public health problems in students of developed countries is 10-12 percent and has been identified as one of the main reasons for dismissal, academic failure and drop-out [12]. In a study conducted in Scotland 67.9% of nursing students experienced anxiety [13]. The mean score of anxiety in nursing students in five countries including Albania, Czech Republic, Malta, Brunei and Wales was 52.3 out of 96 [14]. In the study of Zeighami et al., 63.6% of nursing and midwifery students did not have mental health, and anxiety and sleep disorder had the highest levels among four investigated dimensions [15]. High levels of anxiety will affect memory, concentration and problem-solving ability of nursing students and therefore will reduce learning, adaptation and academic ability [13,16]. High anxiety specifically will cause depression, reduced self-confidence and unhealthy and high risk behaviors among nursing and other students [17]. Anxiety will have a negative effect on their ability as a nurse in applying new ideas and creativity in future [18]. Studies have shown that thinking and high concentration that are required for critical thinking skills will lead to individual's better coping with different situations and thereby will reduce their anxiety and improve mental health [19].

Considering the importance of critical thinking in higher education and the negative consequences of its lack in providing proper nursing care and also the high levels of anxiety in these students and the importance of their mental health to play a proper role in future, the current study was conducted to investigate the relationship between anxiety and critical thinking skills in nursing students.

1.1 Objectives

The present study aim was to investigate critical thinking disposition and the relationship between

anxiety and critical thinking skills in nursing students.

1.2 Research Questions

1. What are the predominant critical thinking and state anxiety dispositions demonstrated by nursing students participating in the overall sample, and by first to fourth year nursing students?
2. Are there significant correlation among overall critical thinking and state anxiety

2. SUBJECTS AND METHODS

2.1 Design

The current research is a descriptive cross-sectional study that to examine critical thinking skills disposition and the relationship between anxiety and critical thinking skills in nursing students.

2.2 Setting

The study setting is the Faculty of Nursing and Midwifery of Amol, affiliated to Mazandaran University of Medical Sciences, Iran. The faculty accepts 70 nursing students per year, on average, in two semesters through the entrance exam in undergraduate degree courses.

2.3 Samples

The research samples included all nursing students (270 students) Samples were selected by census method from all qualified students studying in the second semester of 2013(245 students).

Exclusion criteria were being a guest and exchange student, student's reluctance to participate, presence or history of mental disorder in the individual and patient care technicians studying nursing.

2.4 Information Collection Tools

Data collection tools were demographic questionnaire, Watson-Glaser Critical Thinking Appraisal (A) and Spielberger's State Anxiety Inventory.

Watson-Glaser Critical Thinking Appraisal (A) was translated into Persian in 2010 by Eslami et al. in Iran University of Medical Sciences, and

localized for Iran's social and cultural conditions. Its reliability was obtained by Cronbach's alpha 0.83 [20]. It contains 80 items in five sections of inference, recognition of assumptions, deduction, interpretation and evaluation of reasons. Each of the mentioned parts contains 16 multiple choice questions that score 1 for each correct answer and 0 for each wrong answer. The final score ranges between zero and 80, where each subject can be weak (less than 54), medium (54-59) and strong (60-80).

Spielberger State Anxiety Inventory consists of 20 four-point Likert style items of not at all, somewhat, moderately high and very high, with scores of 1 to 4, respectively. In this questionnaire, the score obtained by the samples is between 20 and 80, and the higher score indicates the presence of more anxiety. State anxiety can fall into these categories: 20 to 31 for mild anxiety, 32 to 42 for moderate downward anxiety, 43 to 53 for moderate upward anxiety, 54 to 64 for moderately severe anxiety, 65 to 75 for severe anxiety and above 76 for very severe anxiety.

This questionnaire has been standardized in Iran with Cronbach's alpha coefficient of 0.94 [21].

2.5 Data Collection

At first, the researcher determined the appropriate time and place after obtaining consent from students and previous agreement with various groups of them. To eliminate anxiety due to exams, the time of filling out the questionnaire was postponed to the time after final exams. At the time of sampling, research units were briefed on how to respond and then were given the questionnaire. They all completed the questionnaire and delivered it.

2.6 Data Analysis

All statistical procedures were performed with SPSS 16 statistical software (SPSS Inc, Chicago, IL). Using descriptive statistics, ANOVA test, Spearman's correlation coefficient, independent t-test and linear regression. Normality was examined with Kolmogorov-Smirnov test. The significance level was set at $p < 0.05$.

3. RESULTS

In this study, 245 nursing undergraduate students were examined, 55.9% of them were female, 81.3% were single, their mean age was

21.34±2.34 years and all of them were the same race group.

To answer the first research question the mean score of critical thinking of participants (based on a cut-off point of < 54) was weak (M=44.38, SD=5.60) (Table 1) and according to results of linear regression, with increase in each academic year, the score of critical thinking significantly increased (95CI=0.62–1.8, p=0.001, β= 0.24, B=1.25) as well as their score for any areas of critical thinking except for Evaluation Argument were poor.

According to results listed in Table 1, the mean and standard deviation of students' total anxiety score was M=33.22, SD=5.31 (possible range of m =20-80) that indicates moderate downward anxiety in these students.

To answer the second research question, there was a significant inverse correlation between anxiety and the score of critical thinking in students (P=0.001 and r=-0.672). Linear regression provided the quantification of the relationship between anxiety and critical thinking with adjusted age and GPA. With every increase of one score in critical thinking, the anxiety decreased by -1.108 (95% CI -1.431 to -0.784) units, p<0.001.

Also a significant correlation was observed between anxiety and investigated areas of critical thinking, deduction (P<0.0001 and r=-0.285) and interpretation (P=0.008 and r=-0.170) and evaluation of reasons (P<0.0001 and r=-0.341).

The current study showed a significant correlation between anxiety and students' age

(P=0.035 and r=-0.135) Spearman's rho for age and course anxiety was rho = -0.14, p = 0.029. This indicates that students with worse anxiety had lower age in the course.

Also significant correlation was observed between anxiety and students' grade point average (P<0.001 and r=-0.496), but no significant relationship was observed between students' academic year (p=0.77), gender (p=0.11), marital status (p=0.09) and anxiety.

5. DISCUSSION

The current research studied the critical thinking skills dispositions and relationship between anxiety and critical thinking skills in nursing students.

The current study findings suggest poor critical thinking skills of students in this faculty. Likewise, Paryad reported 86% of nursing students had poor critical thinking skills [6]. In the review study conducted to examine critical thinking skills between 2002 and 2009 in Iran, the obtained results suggested poor critical thinking skills in nursing students [22]. Most researchers in our country have emphasized the reason of poor critical thinking skills in nursing students as educational deficiencies effective on lack of development of these skills such as imbalance of course contents with the educational process and thus the time limit, many redundant lessons, traditional teacher-centered teaching way, inappropriate assessment methods and deficiency in measurement of critical thinking skills [22-24].

Table 1. Summary of mean scores and standard deviations of overall and of individual critical thinking and state anxiety

Item	Mean scores									
	Overall (N = 245)		First year (63)		Second year(61)		Third year(69)		Forth year(52)	
	M	SD	M	SD	M	SD	M	SD	M	SD
Total critical thinking	44.38	5.60	42.53	4.2	44.26	5.38	44.37	6.41	46.76	5.43
-Inference	5.97	2.1	5.33	1.9	6.44	2.34	5.71	2	6.57	2.36
-Deduction	9.37	1.86	8.69	1.79	8.88	1.46	9.6	1.8	10.40	1.92
-Interpretation	9.01	1.72	8.76	1.72	8.63	1.75	9.11	1.72	9.52	1.59
-Recognition of Assumption	8.78	1.7	8.50	1.49	8.65	1.88	8.65	1.88	9.46	1.03
-Evaluation Argument	10.82	2.46	10.49	1.89	11.01	1.84	10.43	2.83	11.01	3.02
-Anxiety	33.22	5.31	34.34	7.72	33.54	9.30	31.65	8.83	33.59	2.89

In a study conducted in Korea, the score of critical thinking of nursing students was 46.7 ± 6.8 , which is considered poor. They believe that the reason for poor critical thinking skills in their country include the lack of concentration of Korean education system on training critical thinking skills and the lack of a standard for critical thinking skills level for students to achieve at the time of graduation. They think that educational goals to promote critical thinking skills cannot be clearly and accurately manifested in nursing education system including course objectives, planning and teaching methods [25] that is some deal compatible with our opinion. In a study conducted in Japan using California Critical Thinking Skills Test, the score of critical thinking skills and tendency toward it in nursing students was considered unstable. When they compared their results with other researchers, they concluded its potential reason was cultural differences and the way their previous training because differences between Western and Asian cultural values can lead to different understanding of critical thinking. Regarding the effect of previous training, samples experienced teacher-centred education and individual's will, accountability and necessity for free study was not prominent in their learning [26]. In a study conducted in Canada, tendency toward critical thinking was in the normal range in undergraduate nursing students. They believed that factors such as education, the level of provided assistance, the views of educational planners and learning practices affected the score of critical thinking. In their study, 85.5% of students had positive tendency toward critical thinking, which is an essential factor in the development of critical thinking [27]. We agree with all of them, that students, educators, educational system and the environment affected the development of critical thinking and poor critical thinking skills can be due to the nursing curriculum incompetent and so the strategies of teaching and learning may not emphasize the affective/attitudinal dimension of critical thinking in nursing students.

According to study results, there was a significant inverse correlation between anxiety and the score of critical thinking skills i.e. students' score of critical thinking skills reduced with high anxiety. Barkhordari et al. in a study on 118 nursing students observed a significant negative correlation between the above factors [18]. In addition, Amin Khandaghi et al examined the role of mental health on critical thinking skills in a study on 357 medical students. They

observed a significant correlation between mental health and critical thinking skills and Among components of mental health, anxiety had the highest correlation with critical thinking skill [19]. In another study aimed to investigate the relationship between self-efficacy beliefs, meta-cognitive beliefs, critical thinking and mental health, a significant relationship was observed between critical thinking and mental health [8]. The results of the study by Wafika et al. [7] on 165 nursing students of the first and the fourth year in Jordan suggest a direct relationship between critical thinking skills and self-confidence and its inverse relationship with anxiety, they analysed that critical thinking and especially self-confidence have an important role in decrease of anxiety.

In another study on 60 BSc nursing students of the second year in Thailand, the researchers stated that decrease of individual's self-confidence and critical thinking maybe to increase anxiety level. They concluded that nursing education authorities should apply some plans to increase self-confidence hereon to train students with high critical thinking skills so that by increase of the sense of self-efficacy and critical thinking skills, they can overcome their anxiety and make their performance consistent with their potential power [28].

Critical thinking is a highly cognitive thinking and includes the ability for analysis, synthesis and evaluation of issues [29,30]. As the processes of individuals' high intellectual levels affect their behaviours and sometimes their health-related behaviours can be predicted by their reasoning, it is necessary to attend to critical thinking as a key component of the mental health because students who think better and focus better on issues better cope with different situations and have better mental health [19].

6. CONCLUSION

The results of the current study showed poor critical thinking skills in nursing students and significant inverse correlation between anxiety and critical thinking skills such that individuals with low anxiety compared to individuals with high anxiety had more desirable critical thinking skills. Because nursing students are exposed to complicated problems due to the advancement of technology, difficult processes due to diseases, ethical-cultural factors, they need critical thinking skills to provide appropriate health and managerial services in future. Therefore,

appropriate strategies should be applied by nursing education authorities in order to promote critical thinking skills and reduce their anxiety.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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