

Factors in the Critical Thinking Disposition and Skills of Intensive Care Nurses

Nurdan Gezer^{1*}, Belgin Yıldırım² and Esmâ Özyaydın³

¹Medical Surgical Nursing Department, Nursing Faculty, Adnan Menderes University, Aydın, Turkey

²Health Nursing Department, Nursing Faculty, Adnan Menderes University, Aydın, Turkey

³Adnan Menderes University Hospital Intensive Care Unit, Aydın, Turkey

*Corresponding author: Nurdan Gezer, Adnan Menderes Üniversitesi, Hemşirelik Fakültesi Gençlik Cd. No: 709100 Aydın, Turkey, Tel: +90 256 213 87 55; Fax: +90 256 2124219; E-mail: ngezer@adu.edu.tr

Received date: March 13, 2017; Accepted date: April 14, 2017; Published date: April 22, 2017

Copyright: © 2017 Gezer N, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Abstract

Aim: The aim of this study is to define and evaluate factors related to the California Critical Thinking Disposition Inventory (CCTDI) of intensive care unit nurses working at Adnan Menderes University.

Methodology: The population of the study consisted of 60 nurses studying and at working at university hospitals. The sample size consisted of 40 nurses who volunteered to participate in the study. The data were collected from January to March 2012. The Socio-demographic Features Data Form and the CCTDI were used as data collection tools. This inventory was developed based on the results of the Delphi Report in which critical thinking and disposition toward critical thinking were conceptualized by a group of critical thinking experts. The original CCTDI includes 75 items loaded on seven constructs. These are inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence, and maturity. The SPSS 15.0 package software was used in the evaluation of data, which employed numbers, percentage estimations, arithmetic means, the Kruskal-Wallis Test, the t test and Pearson's correlation analysis.

Results: When total score means are examined, it is seen that the mean score obtained by the nurses was 190,90 ± 20,23. The CCTDI score means of the nurses taken into the scope of the study reveal that the mean score on the "truth-seeking" subscale was 21,50 ± 5,62; the mean score on the "Open-mindedness" subscale was 36,95 ± 7,32; the mean score on the "systematicity" subscale was 19,32 ± 3,56; the mean score on the "Self-confidence" subscale was 27,75 ± 6,02; the mean score on the "Inquisitiveness" subscale was 34,47 ± 6,00.

It was determined that there was no statistically significant difference between the CCTDI scale mean scores and the nurses' ages, years of study, income levels, and education levels ($p > 0.05$).

Conclusion: This study found the nurses' critical thinking dispositions to be at a low level. To ensure the development of a critical thinking disposition in nursing, educational opportunities must be provided inside and outside the institution.

Keywords: Critical thinking; Intensive care; Nursing

Introduction

The concept of critical thinking has been discussed and defined by philosophers, psychologists and educators, all of whom have differing but related definitions. Socrates, Plato and Aristotle provided the important foundations for the concept of critical thinking, the idea of questioning assumptions, analyzing rationally and using empirical experience [1].

There is no universally accepted definition of critical thinking. However, the Delphi report published by the American Philosophical Association gives us a description of critical thinking in terms of cognitive skills and affective dispositions that is generic with no domain-specific implications. This has resulted in a definition of critical thinking as, "the process of purposeful, self-regulatory judgment; an interactive, reflective, reasoning process" [2].

Kataoka-Yahiro and Saylor argue that in nursing, "the critical thinking process is reflective and reasonable thinking about nursing problems without a single solution is focused on deciding what to believe and do. According to Yıldırım, critical thinking is "the process of searching, obtaining, evaluating, analyzing, synthesizing and conceptualizing information as a guide for developing one's thinking with self-awareness, and the ability to use this information by adding creativity and taking risks" [3,4].

Critical thinking needs to be a central and vital component of nursing practice. Its significance for nursing is that improved critical thinking skills can also improve educational theory and psycho-motor nursing skills. Critical thinking disposition and skills can have a positive effect on patient care and outcomes. Critical thinking should thus be a basic component of nurses' work, especially in intensive care units [5,4].

In intensive care units, patients with severe physical conditions are monitored, their life functions are supported, care staff use special treatment methods, and the most complex biomedical devices are

employed. Therefore, these units require a considerable amount of attention [6,7]. For this reason, the intensive care unit is an environment in which quick and sound decisions should be taken in cases where the life of a patient is in danger. While intensive care nurses provide care to often unstable patients who suffer from complex medical or surgical conditions, they also administer an increasingly complicated environment and deal with situations while juggling multiple priorities [6,8]. Team members, and especially nurses, working in such an environment must take responsibility in making quick and rational decisions [9].

As members of a profession that makes them the first to determine changes in patients' status, nurses working in intensive care units are required to make rapid decisions when faced with emergency situations or immediate, complex and unexpected problems. In addition to their overall knowledge of nursing, intensive care nurses who make rapid decisions must use the power of critical thinking based on knowledge peculiar to science as an essential and critical element for maintaining patients' lives [3,9].

Along with clinical skills, within the stressful intensive care environment, critical thinking skills help nurses to believe in themselves, provide secure nursing care and ensure competence. Because critical thinking is an important component of decision-making and clinical case management, it is important to help nurses improve their critical thinking skills at every level [8].

Therefore, in intensive care environments, where complex patient care is provided, critical thinking plays an important role owing to the fact that nurses perform a crucial function in inpatient care [8,10].

Objective

The purpose of this descriptive study was to determine the factors affecting the critical thinking disposition and skills of nurses working in the intensive care units of Adnan Menderes University Hospital, Aydin, Turkey.

Methodology

The study's population and sample

The universe of the study comprised a total of 55 nurses working in the intensive care units of Adnan Menderes University Hospital in Aydin, Turkey. Study data were collected from January to March 2012 between the hours of 8:00-16:00. Seven nurses did not agree to participate in the study. One of the nurses was on sick leave; 2 had just had babies. Three of the nurses were on annual leave. One of the nurses died; another one was assigned to another department. The study sample consisted of 40 nurses who agreed to participate. The flowchart of the study is provided in Figure 1. Before initiating this study, the written and verbal informed consent of the participating nurses as well as institutional permission were obtained.

As data collection tools, the study used a Socio-demographic Characteristics Data Form developed by the researchers after reviewing the relevant literature, and the California Critical Thinking Disposition Inventory (CCTDI). The Socio-demographic Characteristics Data Form consisted of ten questions. The data form included questions about nurses' age, sex, marital status, educational status, spouse's educational status and jobs, activities attended, and status of having attended in-service training or congresses. The CCTDI

was developed within the scope of the Delphi project carried out by the American Philosophical Association.

This 75-item scale has 7 sub-scales that were theoretically determined and have been psychometrically tested: inquisitiveness, open-mindedness, systematicity, analyticity, truth-seeking, critical thinking self-confidence and maturity. The inquisitiveness construct includes 10 items that measures one's intellectual curiosity and one's desire for learning without regard for profit. The open-mindedness construct contains 12 items that measure tolerance of divergent views and sensitivity to the possibility of one's own bias. The systematicity construct has 11 items and measures the extent to which a person is organized, orderly, focused and diligent in inquiry. The analyticity construct has 11 items that address reasoning and the use of evidence to resolve problems.

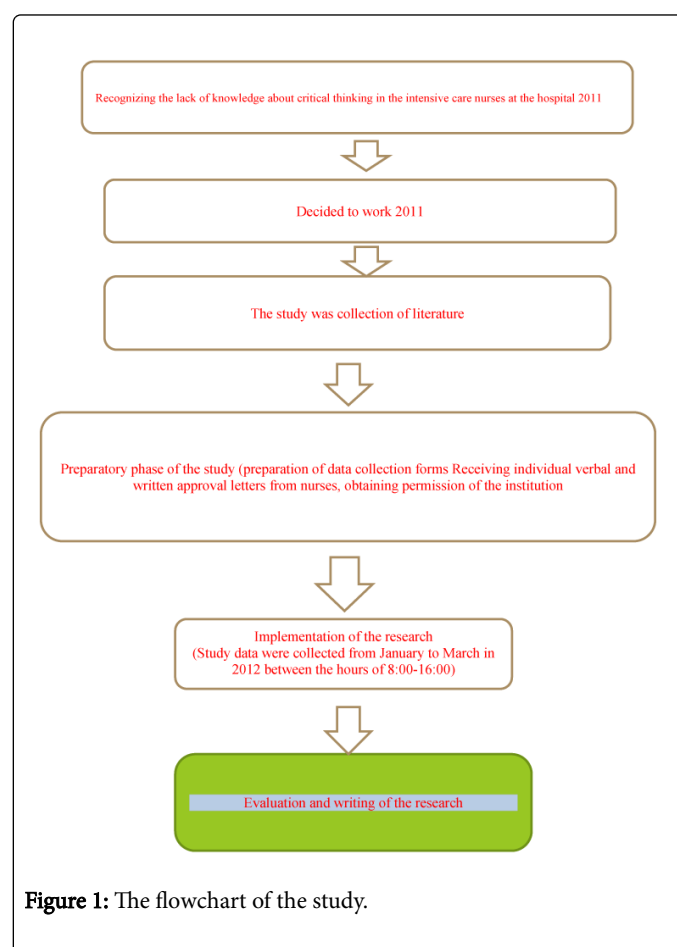


Figure 1: The flowchart of the study.

The truth-seeking construct includes 12 items and measures eagerness to seek the best knowledge in a given context, the courage to ask questions, and honesty and objectivity in inquiry. The critical thinking self-confidence construct has 10 items that measure trust in the soundness of one's reasoning processes. Finally, the maturity construct has 10 items that measure cognitive maturity and judiciousness in decision-making [11]. Kökdemir adapted this inventory, addressing cultural concerns in the Turkish version. Eight persons, including six psychologists, a simultaneous translator and the researcher himself translated the items Turkish and it was administered to 913 students in the faculty of economic and administrative sciences. Item-total score correlations were estimated and 19 items with correlations under 20 were eliminated from the

scale. Factor analysis of the shortened scale found that five items had factor loadings lower than 32 and the items under the open-mindedness and maturity constructs were loaded on one construct. Finally 51 items with six constructs were kept in the scale. The reliability of the entire scale was 88. The reliability coefficients of the subscales ranged from 61 to 78.

In this study, this scale was administered to the nurses with 51 items in six constructs. The reliability of the entire scale was 76. The

reliability coefficients of the subscales ranged from 61 to 75. The CCTDI scale and subscale Cronbach alpha values are shown in Table 1. Data were analyzed using SPSS 15.0 software (IBM Analytics) and were evaluated in terms of numbers, percentages, Reliability Statistics, ANOVA, Pearson's correlation, and Regression analysis.

Researchers	Years	Scale Total (α)	Truth-seeking (α)	Open-mindedness (α)	Analyticity (α)	Systematicity (α)	Self-confidence (α)	Inquisitiveness (α)
Facione, Facione and Giancarlo (n=267)	1998	0.92	0.71	0.73	0.72	0.74	0.78	0.80
Kökdemir (n=193)	2000	0.88	0.61	0.75	0.75	0.63	0.77	0.78
Topçu and Beşer (n=231)	2005	0.84	0.59	0.60	0.63	0.63	0.82	0.76
Dirimeşe (n=56)	2006	0.87	0.66	0.68	0.68	0.39	0.85	0.77
Yıldırım and Özsoy (n=78)	2010	0.90	0.70	0.73	0.68	0.68	0.78	0.76
This Study (n=40)	2012	0.81	0.70	0.64	0.73	0.63	0.85	0.76

Table 1: CCTDI scale and subscale Cronbach alpha values researchers.

Results

In this study, the mean age of nurses was 28.97 ± 5.56 . Of the intensive care nurses, 45%, 30% and 25% had worked for 0-5, 6-10 and ≥ 11 years, respectively. Of the nurses, 5% graduated from a vocational school of health and 95% had bachelor's degrees. Of the participating nurses, 10% worked as a chief nurse and the rest worked as intensive care nurses. Of the nurses, 82.5% stated that they had intermediate socioeconomic status and 37.5% said they had attended different levels of training, respectively. This study determined that the nurses' mean score on the CCTDI was relatively low (190.90 ± 20.23) (Table 2). This study revealed that the nurses' scores on the truth-seeking, open-mindedness, analyticity, systematicity, self-confidence and inquisitiveness subscales were 21.50 ± 5.62 , 36.95 ± 7.32 , 50.90 ± 6.94 , 19.32 ± 3.56 , 27.75 ± 6.02 , and 34.47 ± 6.00 , respectively (Table 2).

	Frequency	Percent
Age Mean	28.97 ± 5.56	
Marital Status		
Married	20	50%
Single	20	50%
Education Status		
High School	3	7.5%
University	37	92.5%
Study Year		
0-5 years	18	45%
6-10 years	12	30%
11 and years above	10	25%

Socio-Economic Level		
Low	5	12.5%
Medium	33	82.50%
High	2	5%
Critical Thinking Different Levels of Trainings		
Yes	15	37.50%
No	25	62.50%
Total	40	100%

Table 2: Socio-demographic characteristics data, * column percentage.

The study did not find a statistically significant difference between the nurses' CCTDI mean scores when adjusted for age, working years, economic status or educational background ($p > 0.05$).

Discussion

Critical thinking is fundamental to nursing practice. National nursing organizations, nurses and intensive care nurses in the workplace identify critical thinking disposition and skills as essential to competent nursing.

Nurses in intensive care units have always needed to be safe, competent and skilful practitioners who are able to make valid judgments concerning their patients' care. This is becoming increasingly difficult due to the ever-increasing complexity and sensitivity of most health care settings. Therefore, critical thinking needs to be a central and vital component of nurses' work in intensive care units.

The mean age of the participating intensive care nurses was 28.97 ± 5.56 years. Of these, 45%, 30% and 25% had worked for 0-5, 6-10 or ≥ 11 years, respectively. However, it was encouraging that 95% of the nurses had bachelor's degrees. Of the nurses, 10% worked as chief nurses and the rest worked as intensive care nurses. Of the nurses, 82.5% stated that they were of middle socioeconomic status, and 37.5% had attended different levels of training in critical thinking. The socio-demographic characteristics data are given in Table 2.

This study determined that the nurses' mean score on the CCTDI was relatively low (190.90 ± 20.23) (Table 3). In Turkey, other studies conducted with nurses, namely Kıranşal et al. [12], Eşer et al. [13], Arslan et al. [14], Yıldırım et al. [15] similarly found that nurses scored low in critical thinking dispositions and skills (198.57 ± 15.61 , 191.01 ± 30.14 , 200.08 ± 21.95 and 189.00 ± 18.21 , for the four studies). Yıldırım et al. [15], Dirimeşe and Dicle [16], Yıldırım-Özeruz [17] similarly found that nurses scored low on critical thinking dispositions and skills [18-20] (Table 4). Ip et al. [21], Shin et al. [22], Topçu and Beşer [23] found medium-level scores in critical thinking dispositions and skills (Table 4).

	N	Minimum	Maximum	Mean	Std. Deviation
Scale Total	40	148,00	243,00	19,09,000	20,23,047
Truth-seeking	40	9,00	35,00	2,15,000	5,62,959
Open-mindedness	40	22,00	54,00	3,69,500	7,32,033
Analyticity	40	36,00	65,00	5,09,000	6,94,225
Systematicity	40	14,00	29,00	1,93,250	3,56,182
Self-confidence	40	14,00	40,00	2,77,500	6,02,878
Inquisitiveness	40	21,00	47,00	3,44,750	6,00,422

Table 3: CCTDI scale points.

Researchers using CCTDI	Country	Scale Total	Truth-seeking	Open-mindedness	Analyticity	Systematicity	self-confidence	Inquisitiveness
Ip et al. [21] (n=122)	China	264.70 \pm 24.01	31.88 \pm 24.01	31.88 \pm 4.44	36.84 \pm 4.92	38.30 \pm 6.48	42.12 \pm 6.60	38.30 \pm 6.48
Shin et al. [22] (n=305)	China	263.20 \pm 18.24	30.12 \pm 4.06	36.91 \pm 3.35	40.42 \pm 4.09	35.70 \pm 4.19	40.98 \pm 5.12	44.64 \pm 5.19
Topçu and Beşer [23] (n=231)	Turkey	267.30 \pm 24.9	42.00 \pm 6.95	46.25 \pm 4.6	50.1 \pm 4.1	46.8 \pm 6.5	43.4 \pm 6.1	48.65 \pm 5.8
Dirimeşe and Dicle [16] (n=56)	Turkey	277.00 \pm 19.7	44.0 \pm 7.0	47.9 \pm 5.9	48.8 \pm 5.3	46.7 \pm 4.8	41.4 \pm 4.2	48.0 \pm 5.5
Şenturan and Alpar [24] (n=1124)	Turkey	216.33 \pm 24.82	26.11 \pm 5.2	51.30 \pm 8.5	46.52 \pm 6.52	25.56 \pm 4.47	27.49 \pm 5.36	39.31 \pm 6.81
Yıldırım [25] (n=78)	Turkey	207.26 \pm 13.79	25.83 \pm 3.81	43.45 \pm 5.13	52.01 \pm 5.62	20.31 \pm 2.07	27.45 \pm 4.48	33.61 \pm 4.35
Yıldırım et al. [15]	Turkey	188.72 \pm 20.71	21.43 \pm 5.06	40.70 \pm 6.38	50.77 \pm 8.08	19.21 \pm 3.21	27.84 \pm 5.07	32.85 \pm 5.85
This Study (2012) (n=40)	Turkey	190.90 \pm 20.23	21.50 \pm 5.62	36.95 \pm 7.32	50.90 \pm 6.94	19.32 \pm 3.56	27.75 \pm 6.02	34.47 \pm 6.00

Table 4: Distribution of findings of studies that used CCTDI.

These findings are in line with those of the present study. Furthermore, Dirimeşe and Dicle [16] conducted a study that determined that nurses scored at an intermediate level in terms of critical thinking disposition (261.1 ± 23.4) In Turkey, nursing services are provided by nurses with different levels of education [18]. For this reason, strengthening nursing care services is much more important issue. According to numerous study findings, it is clear that nurses who are required to use critical thinking skills based on science are in need of strengthening these abilities.

Critical thinking is a cognitive activity that is a composite of knowledge, disposition, skills and attitudes. Intensive care nurses use critical thinking disposition and skills to deliver safe, competent nursing care. As part of problem-solving and decision-making processes, intensive care nurses collect and assess data to address intensive care patient problems.

This study revealed that nurses scored 21.50 ± 5.62 , 36.95 ± 7.32 , 50.90 ± 6.94 , 19.32 ± 3.56 , 27.75 ± 6.02 , 34.47 ± 6.00 in the truth-seeking, open-mindedness, analyticity, systematicity, self-confidence and inquisitiveness subscales respectively (Table 3).

Critical thinking subscale scores obtained from studies by Eşer et al. [13], Şenturan and Alpar [24], Yıldırım et al. [15] show similarities with the present study findings.

As the results of both this and other studies show, nurses' critical thinking disposition scores are not satisfactory, indicating that nurses should be trained in this set of skills. It is necessary not only for nurses, but also for nursing students, to receive education about critical thinking from the moment they start their nursing education [4,23].

Critical thinking is required in intensive care nursing because of its increased responsibilities. In addition, clinical problem solving and decision-making are among the most crucial tasks intensive care nurses perform. Critical thinking and decision-making and problem-solving skills have been described as closely related [23,24].

Nowadays, intensive care nurses face a rapidly changing healthcare landscape, shifting student and patient demographics, an explosion of technology and the globalization of healthcare. Given the multiple financial constraints of managed care, the delivery of appropriate care remains one of the most complex issues in nursing today [15,25].

In the literature, it has been reported that critical thinking can be affected by individual and environmental factors [1,25]. In this study, a statistically significant difference among nurses' CCTDI mean scores by age, working years, economic status and educational backgrounds was not found ($p>0.05$). This study did obtain similar results to those of studies conducted by Eşer et al. [13], Yıldırım et al. [15].

Conclusion and Recommendations

This study found that the participating nurses' critical thinking disposition scores were at low levels. These results suggest that educational opportunities should be provided both inside and outside institutions, that nurses should be encouraged to participate, and that improving their abilities will afford nurses greater opportunities to apply their critical thinking disposition and skills.

Intensive care nurses, nurses, nurse educators and scholars should engage in research about how students learn to apply critical thinking in clinical and intensive care practices. Currently, nurse educators and scholars know very little about how the use of critical thinking in clinical settings is learned.

Further studies are needed in order to more fully explore the meaning of critical thinking in nursing. Future nursing research should focus on the following areas of interest.

1. Exploring the impact of culture on critical thinking.
2. Nurses should be provided training in critical thinking and the impact of this explored.
3. The relationship between happiness and critical thinking.
4. The relationship between depression and critical thinking.
5. Studies involving many nurse scholars should be conducted in order to determine the advisability of developing a consensus definition of critical thinking for nursing. Future studies should focus on identifying the core components of critical thinking in order to develop flexible, usable structures that explain critical thinking, but do not limit nurses to narrow interpretations of the concept.

Finally, future studies should explore the impact of transcultural nursing experiences on critical thinking dispositions and skills. They might also examine which aspects of transcultural experiences have the greatest impact on critical thinking, and which facets of critical thinking are most affected by transcultural experiences.

Study Limitations

The study's limitation was that it was conducted in only one institution and in intensive care units.

Conflict of Interest

I declare that no economic interest or any conflict of interest exists.

References

1. Norris S (1985) Synthesis of research on critical thinking. *Educational Leadership*.
2. Facione PA (1990) *Critical thinking: A statement of expert consensus for purposes of educational assessment and instructions. Research Findings and Recommendations*, The California Academic Press, Millbrae, CA.
3. Katoaka-Yahiro M, Saylor CA (1994) A critical thinking model for nursing judgement. *J Nurs Educ* 33: 351-356.
4. Özkahraman S, Yıldırım B (2011) An overview of critical thinking in nursing and education. *Am Int J Contemp Res* 1: 190-196.
5. Yıldırım-özeruz B (2010) Applied approach to critical thinking in nursing, Özsoy S.A. (eds.) Tuna Matbaacılık, Aydın, 41-53.
6. Akansel N (2004) Investigation of the noise effects on patients in intensive care. *Ege Üniversitesi Sağlık Bilimleri Enstitüsü Yayınlanmamış Doktora Tezi*, İzmir.
7. Khorshid L, Demir Y (2006) Communication problems with patients during mechanical ventilation treatment in intensive care unit. *İzmir Tepecik Education Hospital Magazine* 16: 47-54.
8. Swinny B (2010) Assessing and developing criticalthinking skills in the intensive care unit. *Crit Care Nurs Quart* 33: 12-19.
9. Kaya H (1998) Critical reasoning power in University students. *Istanbul University Health Sciences Institute, Unpublished Doctorate Thesis*, Istanbul.
10. Hicks FD, Merritt SL, Elstein AS (2003) Critical thinking and clinical decision making in critical care nursing: A pilot study. *Heart and Lung* 32: 169-80.
11. Kökdemir D (2003) Decision making and problem solving in uncertainty, Ankara University Social Sciences University. *Unpublished Doctorate Thesis*, Ankara.
12. Kırınşal N, Adana F, Erdağ S (2006) Investigation of the effective factors of critical thinking tendency in nurses 42: 1-5.
13. Eşer İ, Khorshid L, Demir Y (2007) Investigation of critical thinking tendency and factors affecting intensive care nurses. *C U J Nurs School* 11: 13-22.
14. Arslan GG, Demir Y, Eşer İ, (2007) Investigation of factors affecting the trend of critical thinking in nurses 4th International and 11th National Nursing Congress Congress Book, Ankara.
15. Yıldırım B, Özkahraman Ş, Ersoy S (2012) Investigation of critical thinking disposition in nurses working in public hospitals. *Int J Bus Hum Tec* 2: 61-67.
16. Dirimeşe E, Dicle A (2006) An investigation of critical thinking trends of nurses and student nurses. *Dokuz Eylül University Institute of Health Sciences Surgical Diseases Nursing Unpublished Master Thesis*, İzmir.
17. Yıldırım-Özeruz B (2011) Critical thinking in health professionals. *Nobel Tıp Kitabevleri*, İstanbul.
18. Allen PA (1992) Critical thinking behaviors in baccalaureate degree, associate degree and diploma prepared graduate nurses. *Duquesne University, Unpublished Master Thesis*.
19. Burnard P (1995) *Learning human skills*. Oxford: Butterworth-Heinemann, Ltd.
20. Akınoğlu O (2003) Critical thinking as a training value. *Values Education Magazine* 1: 7-26.
21. Ip WY, Lee D, Lee I, Chau, JPC, Wootton YSY, et al. (2000) Disposition towards critical thinking: A study of Chinese undergraduate nursing students. *J Adv Nurs* 32: 84-90.
22. Shin K, Jung DY, Shin S, Kim MS (2006) Critical thinking dispositions and skills of senior nursing students in associate, baccalaureate and RN-to_BSN programs. *J Nurs Educ* 45: 233-237.
23. Topçu S, Beşer A (2005) Analysis of critical thinking trends of students of Dokuz Eylül University School of Nursing. *II Active Education Congress DEÜ Publications*, Izmir, pp: 394-409.
24. Şenturan L, Alpar ŞE (2008) Critical thinking in nursing students. *Cumhuriyet University Nursing School Magazine* 12: 22-30.
25. Yıldırım B (2010) The effect of skill-based critical thinking teaching on the development of critical thinking in student nurses. *Ege University Institute of Health Sciences Public Health Nursing USA, Thesis Advisor Prof. Dr. Süheyla Altuğ Özsoy*, Published PhD Thesis.