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Title of the Paper¹

BACCALAUREATE AND MASTERS' DEGREE NURSING STUDENTS' LEVELS OF CRITICAL THINKING AND FACTORS INFLUENCING CRITICAL THINKING

Abstract:

Although the importance of critical thinking skills in nursing is increasingly being recognized world-wide, there are only a limited number of research reports on this subject in nursing in Turkey. The aim of this descriptive study was to determine the level of critical thinking and the factors that affect level of critical thinking of nursing students. All the students, registered to a nursing school, were invited but in total 312 baccalaureates and 22 master's degree students accepted to participate. The response rate was 84.7 %. The research data were collected with two tools, a "Personal Information Form" and the "California Critical Thinking Disposition Inventory". The students' CCTDI total mean score was $X=230.36$. It was determined that as age, grade point average on transcript and class increased the levels of critical thinking were increased. In addition those who had lived in a city or metropolitan city prior to coming to university and those with nursing experience were found to have higher levels of critical thinking than the others ($p<0.05$). The students' CCTDI total mean score was found to be low. Based on the findings obtained in the research it is recommended that students' critical thinking skills should be enhanced during their nursing education.

Key words:

Critical thinking, nursing students, nursing education, California Critical Thinking Disposition Inventory, Turkey

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INTRODUCTION

Rapid developments and changes are occurring in the information age in which we live and the accumulation of knowledge is rapidly increasing. Scientific and technologic developments are increasing the need for a qualified workforce. This situation today makes it necessary for people to know themselves well, to be aware of their rights and responsibilities, to give importance to individual and social development, to be sensitive, thoughtful, inquisitive to research and make intelligent decisions, and to have critical thinking skills (Kaya, 1997; Taşocak, 1997; Ulupınar, 1997; Semerci, 1999; Karagenç, 2003; Taşçı, 2005). The development of critical thinking skills is very important for nurse professionals who believe in knowledge, search for scientific truths and apply them and who implement evidence-based practice (Taşocak, 1997; Daly, 1998; Dil Coşkun, 2001; Özer, 2002; Karagenç, 2003).

The members of all professions today need to be able to adapt easily to developments and innovations, choose knowledge wisely, think creatively, be flexible, be interested in and sensitive to subjects outside their profession, improve themselves, in short, they need to have gained modern professional qualifications. It is possible for students to be able to gain these qualifications so they can easily adapt to innovations brought by the age with modern education aimed at having students assimilate basic concepts using critical thinking to acquire problem solving skills (Çıkrıkçı, 1992; Kaya, 1997; Öztunç, 1999). For this to occur, it is vitally important for universities to be defined as places where people think globally (Kaya, 1997; Kürüm, 2002; Kökdemir, 2003a). In a modern educational understanding instead of

training individuals to accept prepared facts without question, the goal is to train individuals who know the necessity of learning why and how, who use knowledge they have learned, and who improve and create new information. For this reason one of the most important roles of the education system today is the training of individuals who think critically for society (Akbiyık, 2002; Kürüm, 2002).

The importance of critical thinking in nursing, as in all professions, is emphasized by Turkish and international nursing organizations, and having the ability to think critically is accepted as one of the foundations of nursing practice (Facione, Facione & Sanchez, 1994; Ford & Profetto-McGrath, 1994; Kataoka-Yahiro & Saylor, 1994; Kaya, 1997; Angel, Duffey & Belyea, 2000; Martin, 2002).

The importance given to critical thinking ability has led to requiring the development of critical thinking ability to be supported by educational programs (Kayabaşı, 1995b; Kaya, 1997; Simpson & Courtney, 2002). In the development of these programs priority needs to be given to the evaluation of current scientific research results, and based on these, determination of policies and strategies, and action need to be taken (Kayabaşı, 1995b; Kaya, 1997). Although the importance of critical thinking skills in nursing is increasingly being recognized world-wide, there are only a limited number of research reports on this subject in nursing in Turkey.

LITERATURE REVIEW

The inadequacy of critical thinking ability, which is the dynamism of the quality and contents of nursing care, can have a negative effect on quality, effectiveness and adequacy of care, and the professionalism, autonomy and power of the profession. For this reason to the extent that members of the nursing profession can acquire critical thinking ability, that is the level they will be able to give care that will protect and improve the health of society and improve quality of life. To be able to train nurses who can give this kind of care in the future

it is important that nursing students acquire critical thinking skills during their education (Dil Coşkun, 2001). However in studies conducted in Turkey, with university students, the conclusion has been reached that they have an average level of critical thinking ability, that their university education does not adequately develop their critical thinking skills, and that it is necessary for this subject to be reviewed (Kaya, 1997; Dil Coşkun, 2001). The results of studies on the subject of academic branch, another of the factors affecting critical thinking, have supported one another. In a study by Walsh and Hardy (1999) the relationship between factors of academic branch (English, Psychology, Nursing, History, Education, Business) and gender with critical thinking were examined with 334 students from six different school branches. In the research the academic branch was found to have a significant effect but gender did not. In research comparing academic branches with practical classes (nursing, psychology, education) and academic branches without practical classes (history, English, business) it was determined that branches that have practical classes had lower scores, that is, the level of critical thinking was lower for branches with practical classes (Walsh & Hardy, 1999). In our country, similarly, in a study conducted by Kaya (1997) with 224 students in science, health, social and engineering divisions, significant differences were found between the branches for students' critical thinking ability. The nursing students in the Health Sciences Division were found to have lower critical thinking ability than the other branches. In addition it was determined that as students' socioeconomic level increased their critical thinking ability increased. Also it was determined that students who participated in socio-cultural and scientific activities had higher levels of critical thinking ability than the other students which is supported by other research. A significant difference was found between the students for critical thinking ability for those who defined themselves as risk takers and researchers (Kaya, 1997).

In a study in Turkey by Dil Coşkun (2001) with 92 nursing students, it was determined that the students' had an average level of critical thinking, and that as they progressed into higher social classes their level of critical thinking increased. However the study by Kaya (1997) found that socioeconomic level did not have an effect on critical thinking level. In Dil Coşkun's study students who graduated from high schools in the Central Anatolian region of Turkey had higher levels of critical thinking compared to the students from other regions, but their age, marital status, parent's educational level and parent's employment status did not have an effect of their level of critical thinking.

The factors that affect the development of critical thinking skill, as discussed in relevant literature, are education, age, academic branch, academic achievement, socioeconomic level, participation in scientific and social activities, parent's educational level, and parent's occupation. There are conflicting results from studies regarding education as one of the factors affecting critical thinking. In a study by Shin (1998) comparing associate degree (n=119) and baccalaureate degree (n=115) nursing students' critical thinking and clinical decision making skills significant differences were determined in a positive direction with the baccalaureate degree students. However, in contrast to this finding, in studies conducted by Martin (2002) and Erdem (1995) in our country, the level of education was not found to have an effect on critical thinking level.

There has been considerable interest shown in the topic of critical thinking recently in the nursing field. The reasons for the interest in critical thinking in education could be the enlivening of teaching methods which is the goal of critical thinking development, the rapid changes in the area of health care, developments in the professional roles of nurses, and an increase in the expectations of nurses (Kayabaşı, 1995a; Simpson & Courtney, 2002) .

METHODOLOGY

Setting and sample

This descriptive study was conducted in the University of Cumhuriyet, School of Nursing in Sivas province where located in Central Anatolia in Turkey. This school was founded in 1981 and is one of Turkey's well-known, full-time 4 years nursing school. In total 14 senior lecturers and 16 research assistants work in the school and all the lecturers have an RGN qualification and also had a PhD degree in nursing. In the school Baccalaureate and Master degree education are given to nurses, since 1981.

All baccalaureate degree (N=369) and master's degree (N=25) students at the school were invited to participate in to the study, further sampling method was not assigned.

Instruments

Two forms were used as data collection tools: (1) "Personal Information Form" and (2) "California Critical Thinking Disposition Inventory (CCTDI)".

The Personal Information Form, constructed in the light of the relevant literature by the researchers, consisted of 19 questions, and aimed to determine students' socio-demographic characteristics.

The CCTDI was developed by P.A. Facione, N.C. Facione and Giancarlo in 1998, for the purpose of measuring students' critical thinking disposition and the Turkish version of the tool was tested for validity and reliability by Kökdemir (2003). The tool's internal consistency coefficient has been determined to be .88 (Kökdemir, 2003c). The CCTDI is a 51 item tool with a 5-point Likert type scale and the points given for each item are considered the score. However the negative items (5, 6, 9, 11, 15, 18, 19, 20, 21, 22, 23, 25, 27, 28, 33, 36, 41, 43, 45, 47, 49, 50) are scored in the reverse.

In the evaluation of CCTDI the students' level of agreement with the item is totaled for every item and the result evaluated out of the total possible of 306 points. In the scores a total score less than 240 is considered low, scores between 240-300 are considered average and scores over 300 are considered to represent a high level of critical thinking skills.

Data collection

After having the necessary written approval from the university's relevant authorities of the university, for the administration of the data collection tools in the study, the researchers went to every class, and explained the purpose of the study to the students in the classrooms and emphasized that participation was voluntary. Students were assured that their privacy and confidentiality would strictly be protected as no personal identifiers were included in the questionnaire and any information given will only be used for research purpose. In the study students' informed consents were received. It was also explained that non-participation to the study would cause no disadvantage for the students. The students completed the forms without indicating their names on the forms. It took approximately 20–25 minutes to complete the forms. Although there was no student who refused to participate in the research, there were students who were absent on the day that the tools were administered. Therefore the study was carried out with 334 students (312 baccalaureates and 22 master's degree) and the response rate was 84.7%. Data were collected between 15 - 30 May 2005.

Data analysis

The data obtained in the study were analyzed using the SPSS (Statistical Package Social Sciences) for Windows, Version 10 pocket program. Chi-square, Tukey test variance analysis and t-test were used in statistical analysis.

FINDINGS AND DISCUSSION

Table 1: Distribution of Students' Mean Scores According to Their Educational Level

	critical thinking level			
Education level	N	Minimum	Maximum	Mean
Baccalaureate degree	312	171	275	229,05 ± 18,07

master's degree	22	212	288	248,86 ± 20,62
Total	334	171	288	230,36 ± 18,87

p<0,05 p=0,000

There was a statistically significant difference between the mean critical thinking scores for the baccalaureate and master's degree students ($p<0.05$) (Table 1). The total mean score from the CCTDI for the baccalaureate degree students who were participating in the research was 229.05 and for the master's degree students was 248.86 and the mean score for all of the students was 230.36. This mean is classified as a "low" level of critical thinking according to the CCTDI. In other research conducted in Turkey, similar findings were obtained. In studies comparing nursing students with other university students, the nursing students were found to have low levels of critical thinking (Kaya, 1997; Dil Coşkun, 2001).

Table 2: Distribution of Students' Mean Scores According to Year in School

		Critical Thinking Levels				
		Year	Number	Minimum	Maximum	Mean
BACCALAUREATE	1st	77	171	271	228.78 ± 18.17	
	2nd	65	187	267	227.26 ± 17.21	
	3rd	84	178	271	227,88 ± 17.75	
	4th	86	190	275	231.80 ± 18.90	
MASTER'S	Classroom Period	12	212	288	245.42 ± 19.88	
	Thesis Period	10	217	288	253.00 ± 18.87	
		Total	334	171	288	230.36 ± 18.87

p<0.05 p=0.000

As can be seen in the Table 2, the examination of the CCTDI scores according to students' class it was determined that, other than 1st year students' level of critical thinking skill, as the year of school increased in the 2nd, 3rd, 4th, Master's degree class period, and Master's degree thesis period, the level of critical thinking skills also increased. This result

was found to be statistically significant ($p < 0.05$) (Table 2). The reason for the difference seen in the 1st year is thought to be because a new, more student centered, and challenging curriculum had begun at the school and students' self-learning had been integrated into the educational system.

In the literature, in parallel with our research findings, an increase in critical thinking skills has also been seen as the year of school increased (Brooks & Shepherd, 1992; Çıkrıkçı, 1992; Adams, Stover & Whitlow 1999; Dil Coşkun, 2001; Güneş & Kocaman, 2005). It is known that mental ability is significantly affected by the maturing of critical thinking and the richness of life (Çıkrıkçı, 1992; Kayabaşı, 1995a; Öztunç, 1999; Dil Coşkun, 2001; Evcen, 2002). Assuming that as the students' year at school increased their professional and social experiences were enriched as well, it can be said that this was an expected finding from our research.

Table 3: Distribution of Students' Mean Scores according to Transcript Grade Point Average

Transcript Grade Point Average	Critical Thinking Levels			
	Number	Minimum	Maximum	Mean Standard Deviation
60-69	140	178	268	223.79 ± 16.65
70-79	162	171	288	233.35 ± 18.80
80 +	32	209	288	243.97 ± 17.69
Total	334	171	288	230.36 ± 18.87

$p < 0.05$ $p = 0.000$

As the students' transcript point mean (GPA) increased their level of critical thinking also increased and this difference was found to be statistically significant (Table 3). However

in contrast to our research findings, in a study conducted by Güneş and Kocaman (2005) with 191 nursing students there was no difference in critical thinking level according to academic achievement. The reason for this may be the difference in the measure of academic achievement used in the two studies.

Table 4: Distribution of Students' Critical Thinking Mean Scores According to Place of Residence

Place of Residence	Critical Thinking Levels			
	Number	Minimum	Maximum	Mean
Metropolitan City	57	186	288	234.77 ± 22.12
City	152	171	288	233.36 ± 18.93
Town	107	187	275	224.41 ± 15.88
Village	18	201	252	226.39 ± 14.82
Total	334	171	288	230.36 ± 18.87

p<0.05 p=0.000

A significant difference was found in the CCTDI scores according to where the student lived prior to coming to the university ($p<0.05$) (Table 4). Individuals who had lived in a city or metropolitan city had developed mental processes, such as problem solving, which may be a result of their characteristics, such as, their participation in artistic and scientific activities and taking advantage of more educational opportunities. Also the experiences and life-enrichment for those who lived in cities may be the reason why they had higher levels of critical thinking than those who lived in towns and villages.

Table 5: Distribution of Students' Mean Scores According to Nursing Experience

	Critical Thinking Levels
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Nursing Experience	Number	Minimum	Maximum	Mean
Yes	33	184	288	243.91 ± 21.34
No	301	171	275	228.87 ± 18.00
Total	334	171	288	230.36 ± 18.87

p<0.05 p=0.000

Another expected finding in the research was that students who had nursing experience had significantly higher levels of critical thinking ($p<0.05$) (Table 5). In a study by Martin (2002), similar to our findings, having clinical experience was found to have a positive effect on critical thinking. As was described above, experience and enriched lives are factors that have a positive effect on critical thinking ability. Taking into consideration the process of life experience and enrichment requires mental abilities, such as communication, problem solving, and decision making, which are part of the experience of working as a nurse, then this result can be expected. In contrast to our findings, however, in the study by Kaya nursing experience was not found to have an effect on critical thinking ability. The reason for this difference may be due to the difference in the length and quality of experiences of the research participants and differences in the research design.

Table 6: Distribution of Students' Mean Scores According to Age Groups

Age	Critical Thinking Levels			
	Number	Minimum	Maximum	Mean
17-20	136	171	271	227.93 ± 18.19
21-23	156	178	275	229.50 ± 17.02
24 +	42	197	288	241.43 ± 23.62
Total	334	171	288	230.36 ± 18.87

p<0.05 p=0.000

A statistically significant difference was found in students' critical thinking ability according to their age; as their age increased their mean critical thinking level also increased ($p < 0.05$) (Table 6). Different results have been obtained, however, in other research. Although the research results from the study by Martin (2002) are in parallel with our results, in the study by Adams, Stover and Whitlow (1999) a significant negative correlation was found between age and critical thinking level, and in the study by Scott and Markert (1994) a weak negative correlation was found between age and critical thinking level. Because there is a concomitant enrichment of experience as age increases the increase in critical thinking was an expected finding.

In the advanced statistical analysis no significant correlation was found between level of critical thinking and the students' gender, marital status, parents' educational level, parents' occupation, number of siblings, in which place of the children they were, family general structure, whether or not they willingly chose their profession, or participation in social and scientific activities ($p > 0.05$).

CONCLUSION AND RECOMMENDATIONS

The students' mean score for level of critical thinking was determined to be "low." For this reason it is recommended that educational strategies be developed that will develop students' critical thinking abilities and that, instead of simple lecture format, teaching methods, such as case study analysis and discussion, be used more frequently that will develop the students' critical thinking skills. In the research students who had clinical experience were found to have higher levels of critical thinking than the other students. For this reason it is recommended that the length of clinical and field practice be increased in nursing education. In the research because the conclusion was reached that students do not sufficiently participate in scientific and social activities, it is recommended that they be

encouraged to do so. It is recommended that studies be planned to investigate the reasons why the students' level of critical thinking is low.

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