Original Article

Effectiveness of the Preparatory Clinical Education on Nursing Students Anxiety: A Randomized Controlled Trail

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Abstract

Background: unknown elements about clinic environment and negative experiences cause anxiety; and accordingly, they are effective on students' concentration, memory and problem solving skills, learning/academic success and care given to clinic process
Objective: Effect of the clinical preparatory education given to the freshmen nursing students on their anxiety level was to examine.
Method: This is an experimental, randomized and a controlled study utilized in a pretest-posttest order. The research was conducted at a health college in Turkey in the period between February, 2014 and March, 2015. The necessary permission was received from the ethical board. By means of simple randomization, whereas 35 students were assigned to the intervention group; 39 students were assigned to the control group. The study data was collected by means of face-to-face interview method in the pre- and post-test periods. In this process, the intervention group was given clinical preparatory education. Data was analyzed in computer environment through statistical software based on mean, percentage, chi-square and t-test.
Results: Pre-intervention, nursing students received the intervention and control groups were similar to each other in terms of socio-demographical characteristics and state-trait anxiety starting data ($p>0.05$). As a result of the intervention, there was no statistically significant difference determined with the intervention group with respect to the control group in terms of state anxiety scores before the clinical experience in the pre-test period. When measurements within each group were taken into consideration, it was determined that state anxiety mean score of the intervention group reduced; and this reduction was statistically significant ($p < 0.05$).It was observed that there was significant difference among groups in terms of the effect of the clinical preparatory education given before the first clinical experience on the anxiety; but there was significant difference among the measurements within the intervention group itself.

Keywords: Nursing student, first clinical experience, anxiety, clinical preparatory education, nursing education, randomized controlled trail.

Introduction

Anxiety means concern, worry, burden, boredom, fear and curiosity. In our contemporary time, anxiety is the status in which some values considered as essential for existence of a person are perceived and sensed under uncertainty and threats which cannot be handled (Ozturk, 1995; Isik, 1996). Anxiety is considered under two dimensions of *State* and *Trait* dimensions. The state anxiety is result of perception of individuals regarding their current status as a threatening and dangerous issue. In general, it is considered as a temporary and regular anxiety experienced by everyone. Anxiety level decreases after the stress disappear. On the other hand, trait anxiety is not related with direct surrounding dangers; instead, it is originated from inside of a person. Trait

anxiety is personality characteristic unrelated with current circumstance of a person (Oner & Le Compte, 1983).

Nursing education is difficult/stressful education process, because of nursing education, theoretical information and practice are complimentary to each other (Erbil et al. 2006; Evans et al., 2010). According to the studies, it was determined that about 15-20% of students have high level of anxiety; and that more than 30% of nursing students have high level of anxiety. This situation was result of the fact that nursing students, different from other professions, experience greater pressure as consequences of their mistakes due to giving harm to patients and their professional lives are at stake (Ergene, 2003; Evans et al., 2010). It is known that low level of anxiety obligates persons to be more careful and consolidate learning, but high level of anxiety is adversely effective on learning (Gunay et al., 2008).

In the literature, it is reported that clinic experience in nursing education <especially the first clinic experience> is one of the most significant resources of anxiety (Audet, 1995; Sharif & Masoumi, 2005; Al-Zayyat & Al-Gamal, 2014). Unknown elements about clinic environment and negative experiences cause anxiety; and accordingly, they are effective on students' concentration, memory and problem solving skills, learning/academic success and care given to clinic process (Audet, 1995; Moscaritolo, 2009). In one of the studies available in the literature regarding the very first clinic practice experience, it was determined that 69.1% of nursing students stated that they felt excitement; 60.6% were curiosity; 40.4% anxiety; 33.0% stress; 28.7% fear and 21.3% felt agitation. As an origin of feeling these emotions, 53.2% stated that they *"trying something new"*, 41.5% stated *"failure"*, 31.9% stated *"giving harm to patient"*, 23.4% *"hospital environment"* and 7.4% stated *"infectious disease"* (Sendir & Acaroglu, 2008). In the study conducted by Erbil and colleagues (2006), it was reported that freshmen nursing students who paid visit to hospital for the first time were experiencing greater anxiety with respect to the one felt at other times. It was reported that it was required to provide clinic orientation program to nursing students before their clinic practices, creating a positive clinic environment, minimizing anxiety of students through introducing them with clinic nurses and other employees, raising awareness about clinic/informing and peer education (Atay & Yilmaz, 2011; Arabaci et al., 2015). In the literature, although there are descriptive studies about the clinic anxiety (Bayar et al., 2009; Arabaci et al., 2015), it was observed that there were limited number of studies on the effect of clinic preparatory education taken before the first clinic experience on anxiety.

Aims and objectives of the study

The purpose of the present research is to examine the effect of the clinic preparatory education given to freshmen nursing students before the first clinic experience on anxiety.

H_1: Anxiety score of the freshmen nursing students in the intervention group given clinic preparatory education was greater than the control group.

H_2: The post-education anxiety score of the intervention group consisted of freshmen nursing students given clinic preparatory education was less than their pre-education score.

Method

Trial design

The study was designed as a randomized controlled experimental design: with a pretest post-test and control group.

Participants

The research was conducted in a health college in Turkey in the period between February, 2014 and March, 2015. In the health college, only nursing education was given to totally 439 students of which 86 were freshmen.

The research sampling was consisted of freshmen nursing students attending to the health college, who were not personnel of a health institution, who have not been at a clinic practice before and who were volunteered for the present study. Students experienced with any clinic practice or diagnosed with psychiatric disorder were not included in the study.

Sample Size

In the data collection period of this study, there were 86 freshmen nursing students at the health college. Before the study, all students were answered the personal information form. According to the information collected by the

form, 12 students were excluded from the study because they had previous clinic experiences. Seventy-four students who met research sample inclusion criterions were taken into randomization. Simple randomization was conducted through flipping a coin toss money method. Thus, as a result of this randomization process, whereas the 35 students were included in the intervention group; 39 students were included in the control group. Afterwards of the randomization process, students from the intervention and the control groups were informed at the classroom by the researchers and they were invited for participation into the study. At the end of the first session, four students from the intervention group requested to be discharged from the study based on their rationale that "they already knew the subject"; three students from the control group requested to be discharged from the study because they did not want to participate in the post-test. Finally, the research was completed with totally on 67 students while the intervention and the control groups were populated 31 and 36, respectively.

Administration of clinical preparation education program

The clinic preparatory education program applied on the intervention group was prepared based on the current literature (Chesser-Smyth, 2005; Moscaritolo, 2009; Shaben et al., 2012; Karabacak et al., 2012; Brindley et al., 2014). The clinic preparatory education program was conducted on freshmen nursing students within the scope of the Foundations of Nursing course before the students' first clinic experience. The aforesaid education program was completed in three sessions in two consequent weeks. At the first week, two sessions were completed in every other day. While students were provided information about the course requiring clinic practice and anxiety phenomenon at the first session, they were trained about inter-personal relationships and problem solving skills at the second session. Moreover, meetings were arranged between freshmen students and their senior peers so that they could share their experiences. Each education session took 60-120 minutes. Then, in the second week in which the first clinic practice/experience was initiated, students were taken to the hospital as accompanied with the researchers and they were introduced with clinic/crew responsible with the clinic by the nurses. Education sessions were conducted in an available classroom when students and lecturers have free time. Session days and times were determined jointly with students. Education was prepared by using MS Power Point Presentation Software including visual stimulators inside.

In addition to the clinic preparatory education program, students were given four-week theoretical education under the scope of the Fundamentals of Nursing course as it was necessitated by the program curriculum, which was implemented at the laboratory. Afterwards of these practices, students commenced clinic practices.

The Content of the Clinic Preparatory Education Sessions

The structured clinic Preparatory Education program was composed of three sessions. The contents of the sessions were summarized as below:

The First Session – Introduction of the Practice Course/Anxiety: Researchers introduced themselves and provided general information about the research. Students were given information about course content, school course passing regulation and hospitals and clinics requiring practice by lecturers responsible of the relevant courses. Then, they were informed about description of anxiety, factors causing anxiety, clinic environment and indicents which could potentially be encountered. The session was terminated by a question/answer section; and students were asked for a feedback.

The Second Session - Inter-personal relationships and problem solving skills: Providing Information about Communication and Problem Solving Skills: Students were given information on patient communication, basic skills for good communication, body language, efficient handling methods, communication obstacles, experienced problems and problem solving skills. All senior students were invited to this session so that freshmen students would gain opportunity to share their opinions with their peers; and their questions were answered.

The Third Session – Introduction of the Clinic: Students were taken to three clinics selected among the routine practice areas of the school by the researchers. Nurses in charge in these clinics introduced their clinics in terms of physical and functional aspects of clinics as they were

informed by the researchers. Nurses answered students' qustions regarding the clinic and nursing profession; and ensured that students to express their expectations. In addition, the post-test was applied and participants.

Interventions

The Intervention Group: The education program was completed in two consecutive weeks. In the first week, it was applied in two sessions in every other day. Whereas description of the practice course and anxiety, application of pretests were provided at the first session, information on inter-personal relationships and problem solving skills were given at the second session. Then, the students were taken to clinic environment by the researchers for the third session; and clinic session was instructed by the nurses in charge at the clinic as it was requested by the researchers. At the end of the clinic session, post-tests were conducted in a seminar room at the hospital.

The Control Group: Simultaneously with the intervention group, afterwards of informing students about the research before the intervention at the first interview, pre-tests were completed. Upon completing the education of the intervention group, post-test was conducted for the control group simultaneously with the intervention group. After collecting all research data, the control group was also given the same education upon the request of the students.

Tools

The relevant research data was collected from students in the intervention and control groups by means of the following tools in the research:

Personal Information Form: This form was prepared by researchers based on the current literature (Erbil et al., 2006; Arabaci et al., 2015). Socio-demographical characteristics of nursing students were examined by following questions: *"age, gender, economic status, graduate high school type,etc."*. Student's opinions regarding nursing profession were evaluated by following questions: *"satisfaction level with the current profession; whether they want to be nurse, or not; opinion about prestige of nursing; etc."*.

State–Trait Trait Anxiety Scale*:** This scale was developed by Spielberger, Gorsuch & Lushene (1970); and it was adapted into Turkish and standardized, its validity and reliability were tested by Oner and Le Compte in the period of 1974–1977. Aforesaid scale was consisted of two separate scales including totally 40 items. The first twenty of these items were ***"State Anxiety Scale" determines personal inclination of respondents toward anxiety subject to their personal characteristics. Scale items were provided under direct and inverse expressions.

Direct expressions were scored as None (4), Some (3), A Lot (2), and Completely (1). Inverse expressions were scored as None (1), Some (2), A Lot (3), and Completely (4). The value calculated by subtraction of total score of inverse expressions from the total score of direct expressions was added 50 which is constant value of state anxiety scale so that state anxiety score could be estimated. ***"The Trait anxiety scale",*** consisted of items of the scale from 21 to 40, was prepared to determine anxiety level felt by student because of the current stressful circumstances.

Scale items were presented in direct and inverse expressions. Again, four options were given for each item for scoring purposes. At this point, direct expressions were determined as Almost Never (4), Sometimes (3), Mostly (2), Almost All the Time (1). Inverse expressions were determined as Almost Never (1), Sometimes (2), Mostly (3), Almost All the Time (4). Individual Trait Anxiety Score is estimated by adding 35 which is constant value of the trait anxiety scale on the value calculated by subtracting total score of inverse expressions from total score of direct expressions.

Scores estimated in both scales were in the range of 20–80. Spielberger et al. reported that classification of the scores estimated based on the scale as following: (0-19) not considered as anxious; (20-39) mild anxiety; (40- 59) moderate anxiety; (60-79) intensive anxiety; (60≤) need professional psychological aid (Oner and Le Compte, 1998).

Randomization

In order to ensure homogeneity between the intervention and control group in terms of characteristics, randomization methods were used in the study. For randomization process, list of registered students (n=86) was obtained first. Since they do not conform to criterions set for inclusion into the sampling group, 12 students from this list were excluded from the sampling group.

Then, students who met acceptance criterions were included in randomization process by means of coin flipping. Whereas 35 students were taken into the intervention group, 39 students were included in the control group (Figure 1).

Statistical Analyses

The analyses of the data were carried out with SPSS (Statistical Package for Social Sciences) 21.0 package software. Data collected for nursing students in the intervention and control groups were analyzed through a statistical software package in a computer environment. For the statistical analysis of the data, descriptive statistics such as mean scores, standard deviations and percentages were used: Chi-square test and *t*-test for the parametric data. The significance level was taken as $p<0.05$.

Ethical Considerations

Research ethics committee approval was granted by the institution where the study was carried out (Scientific Research Project Ethics Committee, Dicle Medical Faculty, Dicle University, (26.12.2014\42), and verbal consent was taken from the participating patients and the relevant permissions were taken from the researchers who adapted the State-Trait Anxiety Scale, one of the data collection tools, into Turkish and the institution in which our research.

Limitations

There were as well some limitations with the present study. The first limitation was that the study was conducted at one college and accordingly the sampling group was rather small.

The second limitation of the study was the difficulty of preventing interaction between the students from the intervention and the control groups.

The third limitation was the fact that behavior change takes place slowly among individuals and it is assumed that this period would take from six months to five years (Gungor & Sahin 2007; Glanz et al., 2008; Shumaker et al., 2009).

However, when curriculum of students was taken into consideration, it was determined that clinic educations started less than six months and there was no sufficient time to observe these changes.

Results

Analysis of Personal Characteristics

Regarding the intervention group, mean age of students was determined as 20.25 (SD=2.88); while their 44.4% were female; 47.2% stated that they preferred this profession because of guaranteed job placement; 41.7% stated that they wanted to become a nurse; 47.2% stated that they were not ready for clinic practices. Regarding the control group, mean age of respondent students were determined as 19.68 (SD=1.14); while 48.4% were female; 61.3% stated that they preferred nursing because of guaranteed job placement; 38.7% stated that they wanted to be a nurse or they were not decisive; and 58.1% stated that they were not ready for clinic practices. No statistically significant difference was determined between the students from the intervention and the control group in terms of their opinions about nursing which could be effective on dependent variables and of socio-demographical characteristic; and the groups were exhibiting homogenous property ($p> 0.05$)(Table 1).

Analysis of the Preliminary Anxiety Data

According to the state and trait anxiety preliminary data of nursing students from the intervention and the control group, it was determined that there was no statistically significant difference between the two groups and there was moderate level anxiety (Table 2).

Test Findings with Hypotheses

In order to test the first hypothesis of the research, when the difference between the intervention and the control group was probed to determine if there was any after the intervention group was given clinic preparatory education; no any statistically significant difference was determined between the two groups ($p=0.098$); and thus, the first hypothesis was rejected (Table3).

In order to test the second hypothesis of the research, when scores of the groups were taken into consideration, it was determined that the post-test mean state anxiety score of the intervention group decreased with respect to the pretest score; and this decrease was statistically significant ($p<0.05$); thus, the second hypothesis was accepted.

It was determined that there was no statistically difference among the values estimated within the control group (p>0.05) (Table 4).

Table 1 Social-Demographic Characteristics of Intervention and Control Groups

	Intervention Group (n:31)	Control Group (n:36)	Statistical Analyses (p, X^2,t)
Age	†$\overline{X}$ ±‡SD 20.25±2.88	†$\overline{X}$ ±‡SD 19.68±1.14	§t=1.038 *p=0.303
Gender, n(%)			
Female	16 (44.4)	15 (48.4)	‖X^2=0.104
Male	20 (55.6)	16 (51.6)	*p=0.747
Family type, n(%)			
Nuclear	27 (75.0)	21 (67.7)	‖X^2=0.432
Extended	9 (25.0)	10 (32.3)	*p=0.511
Education Level of the mother, n(%)			
Not Educated (No Certificate)	24 (66.7)	22 (71.0)	‖X^2=0.143
Educated and certified (primary-uni)	12 (33.3)	9 (29.0)	*p=0.705
Education Level of the father, n(%)			
Not Educated (No Certificate)	9 (25.0)	7 (22.6)	‖X^2=0.054
Educated and certified (primary-uni)	27 (75.0)	24 (77.4)	*p=0.817
Living with, n(%)			
Familiy	22 (61.1)	12 (38.7)	‖X^2=3.344
Dormitory	11 (30.6)	14 (45.2)	*p=0.067
Other	3 (8.3)	5 (16.1)	
Prefferred order of the school, n(%)			
Firts 3 rank	23 (63.9)	13 (41.9)	‖X^2=3.229
4 and above	13 (36.1)	18 (58.1)	*p=0.072
Reason for preffering to be Nurse, n(%)	17 (47.2)	19 (61.3)	‖X^2=2.713
Guaranteed job	7 (19.4)	2 (6.5)	*p=0.258
Interest to the this occupution	12 (33.3)	10 (32.3)	
Family's wish			
Contentment level to this occupution, n(%)	20 (55.6)	20 (64.5)	‖X^2=0.556
0-5	16 (44.4)	11 (35.5)	*p=0.456
6-10			
Contentment level to Nurse, n(%)			
Yes, I do	15 (41.7)	12 (38.7)	
No, I don't	8 (22.2)	7 (22.6)	‖X^2=0.067
Indecisive	13 (36.1)	12 (38.7)	*p=0.967
Prestige perception for Nursing, n(%)			
Low-Level	8 (22.2)	8 (25.8)	‖X^2=0.134
Mid-level	24 (66.7)	20 (64.5)	*p=0.935
High-Level	4 (11.1)	3 (9.7)	
Feeling to be ready for clinical practice, n(%)			
Yes, ready	12 (33.3)	8 (25.8)	‖X^2=0.793
No, Not ready	17 (47.2)	18 (58.1)	*p=0.673
Indecisive	7 (19.4)	5 (16.1)	

**p>0.05, †Mean,‡SD: Standart Deviation,§t: Significance test of difference between two means,‖Pearson Chi-Square Test.*

Table 2 Examination of Anxiety Starter Data of Nursing Students Accepting in the I Intervention and Control Group

Variables	Intervention Group (n: 31)	Control Group (n: 36)		
	†$\bar{x}$ ±‡SD	†$\bar{x}$ ±‡SD	$t^{§}$	p^{*}
State-trait anxiety The Trait anxiety scale	42.22±5.01 47.58±4.84	40.65±5.36 46.42±4.72	1.244	0.218

**p>0.05, †Mean,‡SD: Standart Deviation,§t: Significance test of differencebetweentwomeans.*

Table 3 Comparison of State Anxiety Scores of Nursing Students after Clinical Preparation Training in the Intervention and Control Group

Variables	Intervention Group (n: 31)	Control Group (n: 36)		
	†$\bar{x}$ ±‡SD	†$\bar{x}$ ±‡SD	$t^{§}$	p^{*}
State Anxiety	40.75±4.37	39.00±4.12	1.677	0.098

**p>0.05, †Mean,‡SD: Standart Deviation,§t: Significance test of difference between twomeans.*

Table 4 Comparison of State Anxiety Scores Before and After Clinical Preparatory Training of Nursing Students in the Intervention Group (n:31)

Variable	Intervention Group (n: 31)			
	†$\bar{x}$ **±SD††	$t^{§}$	p^{**}	¶ r, p^{**}
State Anxiety Score before Training	42.22±5.01	2.055	***0.047***	r=0.588 ***p<0.001***
State Anxiety Score after Training	40.75±4.37			

p<0.05, †Mean,‡SD: Standart Deviation,§t: Significance test of difference between two means in dependent groups,r* ***p* *Correlation and significance value*

Table 5 Comparison of State Anxiety Scores Before and After Clinical Preparation Training for Nursing Students in the Control Group (n:36)

Variables	Control Group (n: 36)			
	†$\bar{x}$ **±SD††	$t^{§}$	p^{**}	¶ r, p^{**}
State Anxiety Score before Training(D1)	40.65±5.36	1.442	***0.160***	r=0.121 ***p>0.005***
State Anxiety Score after Training(D2)	39.00±4.12			

p<0.05, †Mean,‡SD: Standart Deviation,§t: Significance test of difference between two means in dependent groups,r* ***p* *Correlation and significance value*

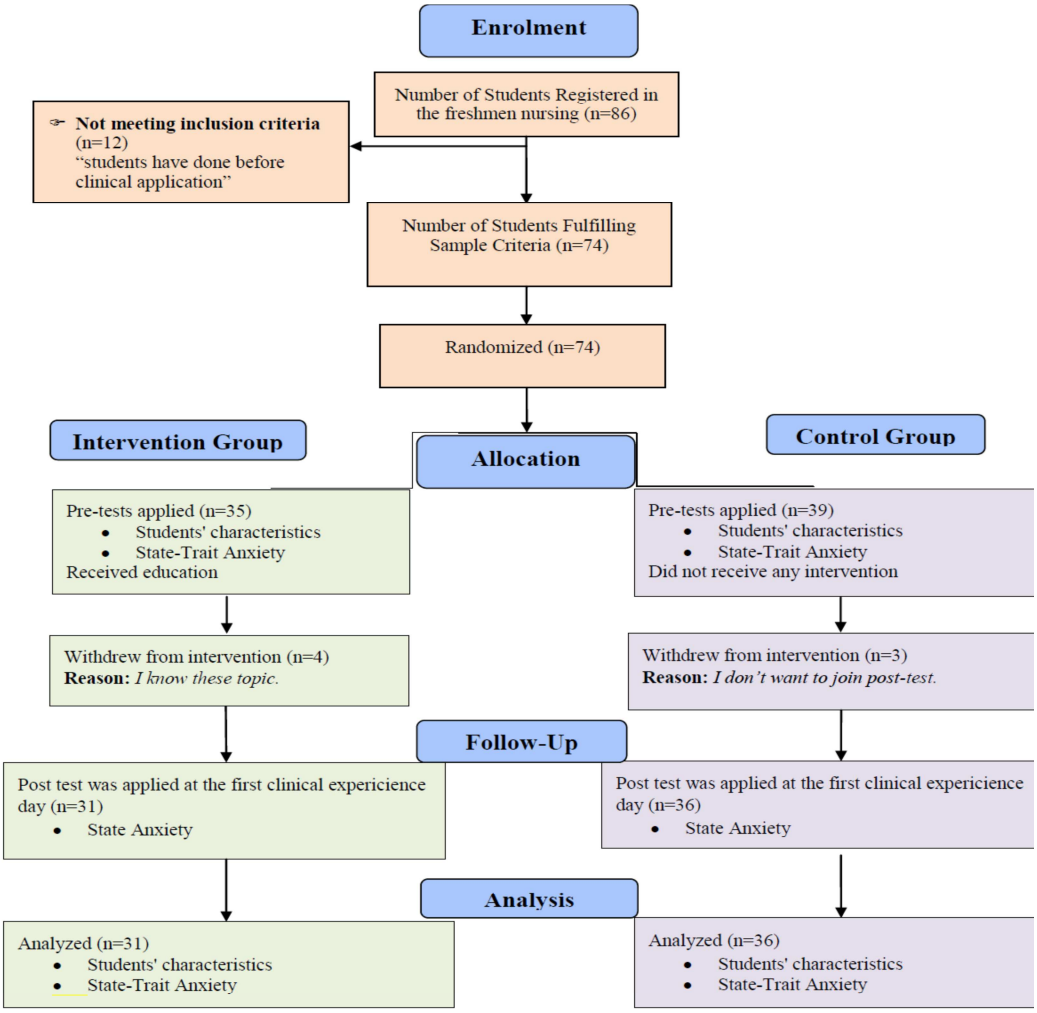

Figure 1. Flow consort diagram of study participants.

Discussion

In the present research, it was observed that socio-demographical characteristics of students included in the intervention and the control groups and their opinions regarding nursing profession which could be effective on dependent variables were similar to each other in terms of state-trait anxiety; and they were considered as homogenous (Table 1, 2). Similarity between the two groups was important in terms of assessing the impact of the given education. It was determined that state-trait anxiety levels of the intervention and control groups before the first clinic experience were at moderate level (Table 2). In the study of Bayar and colleagues (2009), conducted to determine opinions and anxiety levels of nursing students regarding clinic practices, it was reported that students were anxious at moderate level before the clinic practice. In another study conducted to determine state-trait anxiety levels of freshmen nursing students and the relevant effective factors before-during-after the first clinic experience, it was found that students were experiencing moderate level of state-trait anxiety before the clinic experience (Arabaci et al., 2015). According to the study of Sari and colleagues (2008), it was seen when anxiety levels of midwife students before the first invasive intervention that state-trait anxiety levels were at moderate level. Spielberger and colleagues (1970), reported that there was correlation between trait and state anxiety scores; and that individuals with higher

trait anxiety level had also higher state anxiety levels (Oner and Le Compte, 1983). These findings in the literature display similarity with the findings of the present research.

As a result of the research, it was determined that there was no significant difference between the intervention and the control group in terms of anxiety scores after the intervention group was given clinic preparatory education (Table 3). When it was investigated that whether there is difference among scores calculated within groups, it was determined that the mean state anxiety score decreased in the intervention group afterwards of the clinic preparatory education; and this decrease was statistically significant (Table 4). Although this situation does not support the H1 hypothesis which asserts that there is a difference between the intervention and control groups in terms of anxiety scores, it supports the H2 hypothesis which asserts that there is difference among the scores calculated within the intervention group. Significant decrease of scores within the intervention group was considered important because it indicates that education was effect even though it is minor. It was considered that this situation could be related with the fact that behavioral changes take place slowly and it could could take from six months to five years (Gungor & Sahin, 2007; Glanz et al., 2008; Shumaker et al., 2009). Nevertheless, when effetive curriculum was taken into consideration, it was realized that clinic educations started before 6 months and this period was not sufficient for any behavioral change. Again, it was reported in the literature that negative affection of students would take about two weeks; and the first two weeks are considered as observation stage and this situation resembles to Benner's theory (a process passing through from novice to proficiency) (Chesser-Smyth, 2003). If the relevant literature is examined, although it could be observed that there are limited number of empirical studies on the effect of the clinic preparatory education on anxiety; in the study of Karabacak et al. (2009) which investigated the effect of preparation of students before their first clinic experience by means of various methods on their stress levels at the first practice day, no any statistically significant difference was determined between the intervention and control groups. In the study of Ratanasiripong and colleagues (2012), it was reported that five-week early biofeedback intervention before commencing clinic education is effective on anxiety. In this regard, it is suggested that effectiveness of different teaching methods which include solution approaches in which long education period and long observation time in the post-education period organized so that anxiety levels of students to decrease are required to be investigated.

Conclusions

Conclusively, although students in the intervention group were given clinic preparatory education before their first clinic experience, they experienced anxiety like the students from the control group. In this regard, both instructors and health employees are required to consider that anxiety levels of students could be at high level in the beginning of the clinic practice. It is suggested that effectiveness of different education methods including approaches for solutions in which education sessions and observation periods are kept longer to reduce anxiety levels of students could be investigated.

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