

The effect of affective learning on alexithymia, empathy, and attitude toward disabled persons in nursing students: A randomized controlled study

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Abstract

Purpose: To evaluate the effect of affective learning on alexithymia, empathy, and attitude toward disabled persons in nursing students.

Design and Methods: This prospective, randomized, controlled trial study was implemented among 70 nursing students. Based on transformative learning theory, the affective learning method was applied to the intervention group. Toronto Alexithymia Scale (TAS), Empathic Tendency Scale (ETS), and Attitudes Toward Disabled Person Scale (ATDPS) were administered to both groups.

Results: The intervention group showed a statistically and significantly lower score at TAS and higher score at ATDPS compared to the control group, whereas no statistically significant difference was found in ETS score.

Practice Implications: Affective learning methods could be implemented in the nursing course for improving students' attitude toward disabled persons, and reducing alexithymia.

KEYWORDS

affective learning, alexithymia, disabled health, nursing

1 | INTRODUCTION

Disabled persons are more likely to encounter health problems compared to other people, and their health care needs also increase due to problems associated with their disabilities. Nurses have significant responsibility in finding solutions to health problems and meeting the health care needs of disabled persons.¹ The first and most important step in the care of disabled persons is to understand their feelings and behavior.² Expressing the emotions accurately and understanding the emotions of disabled persons are essential in nursing care. Therefore, health requirements may be met through spiritual and therapeutic communication.² Nurses should be exemplary in developing a positive attitude toward patients and their families/relatives and show empathy.³ To understand the emotions of disabled persons, it is important to recognize and define the emotions experienced.⁴ Alexithymia, also known as emotional deafness, is psychopathology characterized by the inability to

understand, identify, and express emotions of one's self or others.⁵ An individual, who has difficulty in identifying his or her own emotions, also has the same problem in identifying and understanding the emotions of other people. In other words, an individual cannot be sensitive to the emotions of other people.^{6,7} Moreover, it is stated that alexithymia leads to a lack of empathy, attitude, and interrupts interpersonal relationships.⁶ In this context, examining alexithymia in nursing students, who are constantly communicating with the patients, is very important.⁸ There are studies showing that the nursing curriculum should be structured to improve the emotional awareness of students.^{4,8,9}

Healthcare professionals providing health care to disabled persons are inadequate in determining their problems and finding the necessary solutions.⁷ Of midwives and nurses, 64.3% encounter problems during communication with disabled persons; 50% cannot determine their health requirements, and 2.9% have problems with directing the health problems.³ It was shown that the awareness of

nursing students toward disabilities is lower compared to nurses.^{7,10} This may be due to the students' inability to adequately internalize perception, awareness, and empathy toward disabilities.^{3,11}

The development of positive attitudes of nurses, who play an important role in the care and rehabilitation of disabled persons, should start in school.¹² The nursing curriculum focuses on the cognitive, psychomotor, and affective domains.¹³ There are measurable results regarding the success of nursing education in cognitive and psychomotor domains. However, there are opinions that the affective domain of learning, which develops skills, such as alexithymia, attitude, and empathy, is difficult in education.^{12,13} The affective skills are the product of the interaction between an individual's abilities and the environment; therefore, they cannot be achieved only by education, and the validity and reliability of the measurements related to the conversion to behavior are low.¹² There are studies suggesting that nursing curricula should be changed to develop affective skills.^{12,14,15} It was observed that traditional approaches used in education are not successful in changing attitudes toward disabled persons.^{15–17} In literature, there are studies showing that some methods, such as simulation and empathy activities, are used to support the affective domain of nursing students toward disabled persons.^{16–18}

One of the suggested learning approaches in affective domain education is transformative learning theory.^{14,15} The main feature of this theory is to enable people to change their thinking and develop different perspectives on events and life.¹⁹ Analyzes and self-assessments during the transformation process allow to guide actions and make sense of attitudes and emotions. Furthermore, the transformation affects the experiences that lead to the formation of actions.¹⁵ This is an important process for affective learning.^{12,14,15} The transformative learning theory is considered to improve the affective skills of students if used in disabled health courses.

The purpose of the study was to evaluate three research hypotheses regarding the efficacy of affective learning, which is based on transformative learning theory, in improving the following dimensions and skills of nursing students:

- H₁: Alexithymia,
- H₂: Empathic tendency,
- H₃: Attitudes toward disabled persons.

2 | METHODS

2.1 | Study design

This was a randomized controlled study.

2.2 | Participants

This study was conducted between October and December 2019 on 70 volunteer students studying in the Department of Nursing in the Faculty of Health Sciences in Istanbul, Turkey. The inclusion criteria

were as follows: (a) being 18 years old or over, (b) studying in the second year, (c) volunteering to take a disability health course (d) not attending any course for disabled persons before (e) not living with a disabled family member. The second-year nursing students were selected for the study since they have not taken disability courses.

To determine the sample size, power analysis was performed using the GPower 3.1 program. Data reported in similar studies in the literature were used in sample size calculation.^{10,20} The sample size was calculated to achieve a 95% power at a significance score of 0.05. The required number of participants to be included in the study was determined to be 78 with an effect size of 0.5 and the Type-I error rate of 0.05. The power of the analysis with this sample size was found to be 87.7%.

A randomly ordered list was issued according to the student numbers in the classroom list by using the website [random.org](https://www.random.org). A total of 78 students were included in the study; however, 8 students who did not meet the inclusion criteria were excluded from the study. The study was completed with 70 students, 34 were in the intervention group and 36 were in the control group. A computer-based random number generator was used to divide students into groups. An independent statistician carried out the randomization. The study complied with the guidelines of the Consolidated Standards of Reporting Trials (CONSORT) Checklist. The flow diagram created by the researchers was based on the CONSORT (Figure 1). The study was registered in Clinical Trials with the registration no "NCT04365894."

2.3 | Data collected and scales administrated

Demographic data (age, gender, annual income, and place of accommodation) were obtained from the participants. Data collection was carried out using (a) Toronto Alexithymia Scale (TAS) (b) Empathic Tendency Scale (ETS) and (c) Attitudes Toward Disabled Person Scale (ATDPS). Data collection forms were delivered at the beginning of the first course and the end of the last course. No intermediate measurements were made, as students had to complete the transformative learning process. Data were collected with paper and pencil.

- TAS: This is a 20-question scale developed by Bagby et al.²¹ TAS-20 Turkish validity and reliability analyzes were performed by Güleç et al.²² This scale evaluates the status of alexithymia, which is defined as the lack of self-emotion and excitement. This is a 5-point Likert scale, and individuals were asked to mark the most appropriate options among "Never," "Rarely," "Sometimes," "Often," and "Always." The scale consists of three subscales. The Difficulty in Recognizing Emotions subscale, defined as difficulty in identifying emotions and distinguishing them from bodily sensations accompanying emotional arousal, consists of seven items (items 1, 3, 6, 7, 9, 13, and 14). Defined as difficulty in projecting emotions to others, the Difficulty in Speaking Emotions subscale consists of five items (items 2, 4, 11, 12, and 17).

CONSORT

TRANSPARENT REPORTING of TRIALS

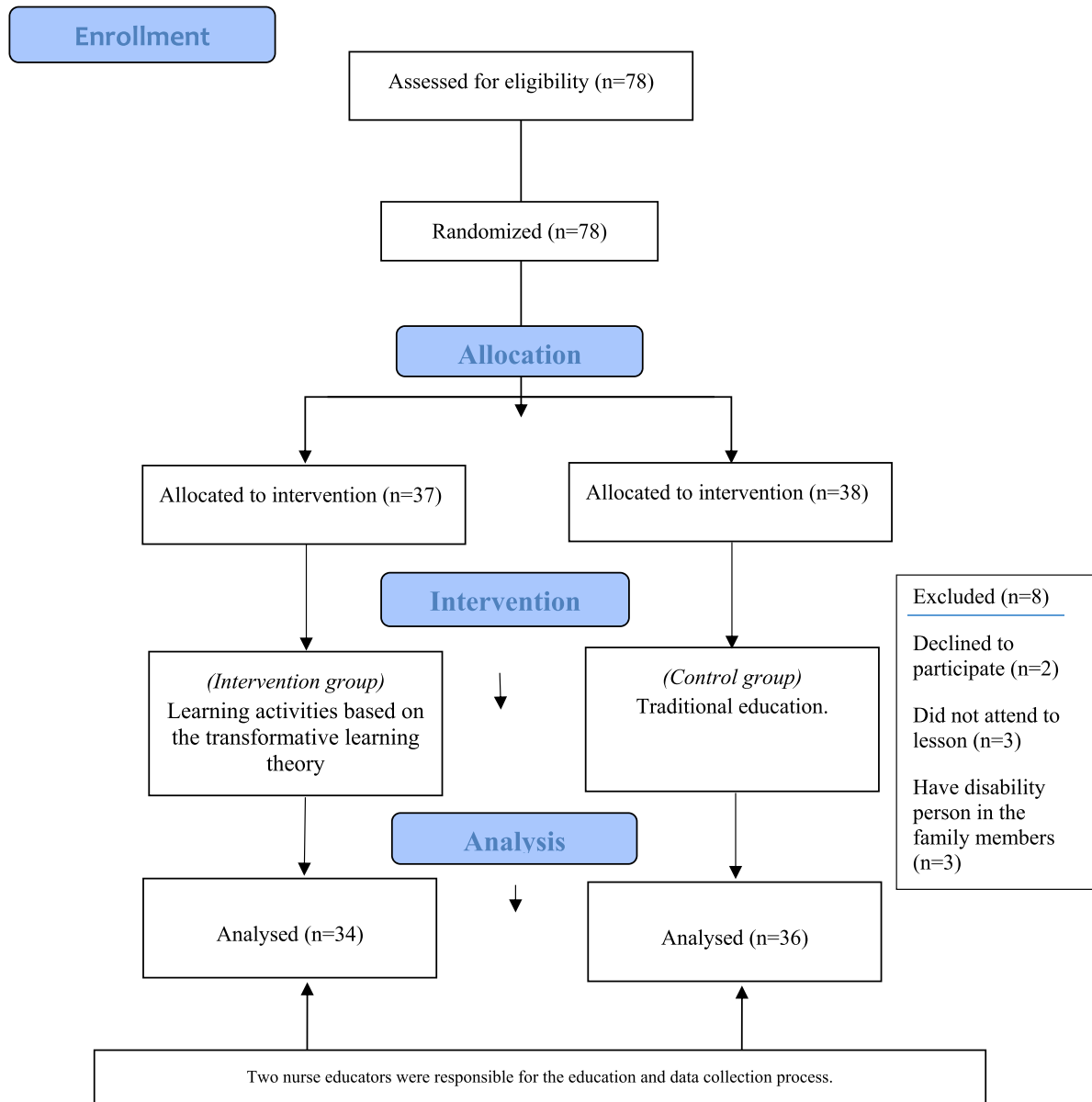


FIGURE 1 Allocation of subjects according to the CONSORT 2010 Flow Diagram [Color figure can be viewed at wileyonlinelibrary.com]

The scoring is done by summing up the points of the items. Five of these items (items 4, 5, 10, 18, and 19) are reversed. The lowest score was 20, and the highest score was 100. The high scores indicate high alexithymia. The reliability coefficients of the sub-scales were 0.82, 0.75, and 0.72, respectively.²² In this study, the authors found the reliability coefficients as 0.80, 0.79, and 0.77, respectively.

- ETS: Developed by Dökmen,²³ the Empathic Tendency Scale aims to measure the potential of people to empathize in daily

life.²³ It is a 5-point Likert scale consisting of 20 items. The responses range from “completely contradictory” to “completely eligible.” While collecting points, questions 3, 6, 7, 8, 11, 12, 13, 15 are collected in reverse. The minimum score was 20, and the maximum was 100. The total scores refer to the participants' empathic tendency scores. The high scores indicate high empathic tendency; low scores indicate low empathic tendency. In the study where the scale was developed, the reliability coefficient was found to be

0.91.²³ In the study, the reliability coefficient was found to be 0.85.

- ATDPS: It was developed by Yuker et al.²⁴ and adapted to Turkish by Özyürek.²⁵ The scale aims to measure attitudes toward people who are affected by inadequacy without distinguishing disability groups in particular. This 6-point Likert scale consists of 20 items graded as follows: “I totally agree (+3), I agree (+2), I somewhat agree (+1), I somewhat disagree (−1), I disagree (−2), I strongly disagree (−3).” Items 2, 5, 6, 11, and 12 are inverted. The sum of the points of items was calculated, and the sign of the total score of the scale was reversed, and 60 was added to the obtained score. As a result of this calculation, the scores vary between 0 and 120. The high scores express positive attitudes toward disabled persons and low scores mean negative attitude. In the study, the reliability coefficient of the scale was calculated as 0.79.

2.4 | Intervention

The study was conducted on nursing students who have not taken a course related to the care of disabled persons. Disabled health course was given to two groups in this faculty in the fall semester. The study participants were randomly assigned to two groups as intervention group and the control group. All aspects of the research were explained to the students before the course. Intervention and control groups received the course

simultaneously. Before the course, the researcher was informed that the activities carried out during the course should not be shared with the other group. The control group was trained in the traditional method and the intervention group with the learning methods based on the transformative learning theory. The transformative learning method was applied according to these four learning activities by the only researcher experienced in the field of disability. The learning outcomes, educational content, and learning methods are shown in Table 1.

2.4.1 | Traditional learning

Disabled health course is carried out with the traditional learning method. This course includes the methods in which the information is transmitted to the students by the teacher and the students are passive listeners. In the study, the traditional learning was carried out in the classroom by verbal expression of the contents, such as written material and PowerPoint presentation, case report, and concept map to the students.

2.4.2 | Transformative learning

Transformative learning is an individual's learning to question one's assumptions, beliefs, emotions, and perspectives. An individual who

TABLE 1 Activities according to disabled health course

Disabled health course content	Control group Learning activities	Intervention group Learning activities
Problems experienced by disabled people	Verbal explanation by the educator	Inviting the disabled individual to the class
Problems experienced by disabled people	Verbal explanation by the educator Question-answer	Creative drama prepared by the students “Theme: Let's overcome obstacles”
Biographies about disability	Case study presentation by the educator	Case study presentation by student groups Reflective thinking
Self-assessment about disability	Self-study	Self-study Self-reflection
Rehabilitation services	Verbal explanation by the educator	Educational trip Rehabilitation center trip
Understanding disability	Verbal explanation by the educator	Scenario-based simulation “Theme: What would I feel if I was a disabled individual”
Showing the problems experienced by the disabled people	Concept map prepared by the educator	Concept map created by the student group
Problem-based solutions for the problems experienced by the disabled people	Verbal explanation by the educator	Discussion problem-based solutions on concept map prepared by the students

goes through the transformative process is expected to transform one's beliefs, assumptions, and experiences into new meaningful perspectives. Therefore, the transformative learning methods in education should include four activities. These include investigative, collaborative, higher-order thinking, and interactive learning activities.¹⁴

The learning activities in this study focused on the student's recognition of herself/himself and his/her emotions and understanding of the other person's emotions. Activities were organized for empathy and communication skills that may affect the alexithymia score of the students. *Investigative learning activities* were used to encourage access to information through evidence-based research for students to discover the information themselves. *Collaborative learning activities* include activities, such as interviewing disabled persons and discussing problems of disabled persons, visiting rehabilitation centers, group work on disability problems, creative drama (Theme: Let's overcome obstacles) prepared by the learners, and scenario-based simulation. In the creative drama activity, students took the roles of the persons with disabilities and the nurses, act according to the roles and evaluate themselves, and view the events from a different perspective. In the simulation application, the students took roles, such as people with disabilities, nurses, and so on, in the scenario written by the educator for the care of disabled persons. They self-criticized during the debriefing phase of the simulation. The students were asked to write their opinions about disabilities to reflect their current assumptions in different ways. During the reading event, the students were read their opinions and discussed their assumptions. Self-reflection, critical reflection, and imaginative activities enabled them to examine themselves critically (Theme: What would I feel if I were a disabled person). Therefore, *higher-order thinking activities* were included. Concept maps showing concepts and relationships between concepts graphically are two-dimensional diagrams used to identify and solve problems. The students prepared concept maps for the problems and solutions of a disabled person in the hospital. Creating concept maps for the problems experienced by a disabled person contributed to the realization of the transformation. The students interactively participated in all activities.^{14,15} Once the study was completed, transformative learning activities were offered to the control group.

2.5 | Ethical considerations

The Ethics Committee Approval was obtained from the Ethics Committee (Number 42734378-100-E.3755) of Istanbul Medeniyet University before the study. The students were informed about the study and those who agreed to participate read and signed the consent form prepared for each group. The study was conducted in compliance with the "Ethical principles for medical research involving human subjects" of the Helsinki Declaration.

2.6 | Data analysis

Data were analyzed using SPSS (Statistical Package for Social Sciences) version 16.0. The Shapiro–Wilks test was used to assess whether the data had a normal distribution. Data were not normally distributed; therefore, nonparametric tests were used in the analysis. The average, percentage, frequency and mean values were calculated and determined. The Mann–Whitney *U* test, Wilcoxon signed-rank test, paired sample test, and Pearson's chi-squared test were used to investigate differences. The relation of scales was assessed using Pearson's correlation analysis. A *p* value less than 0.05 was considered statistically significant and a confidence interval of 95%.

3 | RESULTS

There was no statistically significant difference between the groups in terms of demographic data. In the intervention group, 88.2% were females and 11.8% males, with a mean age of 20.44 ± 0.78 years. In the control group, 91.7% were females and 8.3% males. The families of most of the students lived in the city.

3.1 | Research hypothesis 1: TAS Score

Table 2 shows the mean TAS scores before and after interventions according to groups. There was no statistically significant difference between the groups in terms of TAS and subscale scores before the disabled health course ($p > 0.05$). However, there was a statistically significant difference between the groups in terms of TAS and subscale scores after the disabled health course. Furthermore, there was a significant difference between the TAS and subscale scores before and after in the intervention group ($p < 0.05$). There was a significant difference in only the Externally Oriented Thinking subscale before and after in the control group ($p < 0.05$; Figure 2, Table 2).

3.2 | Research hypothesis 2: ETS Score

Table 3 shows that there was no statistically significant difference between the groups in terms of empathic tendency score before and after the disabled health course ($p = 0.808$, $p = 0.688$). Besides, there was no statistically significant difference between the groups in terms of empathic tendency score before and after the disabled health course (Table 3, Figure 3).

3.3 | Research hypothesis 3: ATDPS Score

Table 3 shows that there was no statistically significant difference between the groups in terms of ATD score before the disabled health course ($p = 0.768$). However, there was a statistically significant difference between the groups in terms of Attitudes Toward Disabled

TABLE 2 Toronto Alexithymia Scale (TAS) and TAS subscale scores before and after intervention in the two groups

Scale/subscales		Intervention group (n = 34)		Control group (n = 36)		Test		Value	
		Median	Median	p	p	U	p	Z	
Toronto Alexithymia	Before	61.00	57.50	–0.818	–3.129 ^a				
	After	46.50	54.50	–2.605	–2.121 ^b				
							0.009	0.34	
Difficulty identifying feelings	Before	23.00	20.00	–1.137	–3.327 ^a				
	After	17.00	20.00	–1.778	–1.633 ^b				
							0.049	0.102	
Difficulty describing feelings	Before	15.00	14.00	–1.424	–1.781 ^a				
	After	12.50	13.00	–1.432	–1.732 ^b				
							0.024	0.083	
Externally oriented thinking	Before	25.00	23.50	–0.795	–3.328 ^a				
	After	17.00	22.00	–2.446	–2.000 ^b				
							0.014	0.046	

Note: $p < 0.05$: Statistically significant.

^aBefore – After Intervention group.

^bBefore – After Control group.

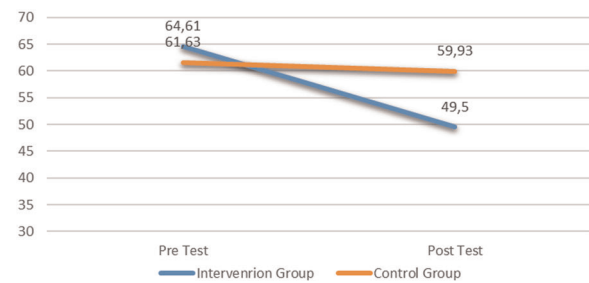
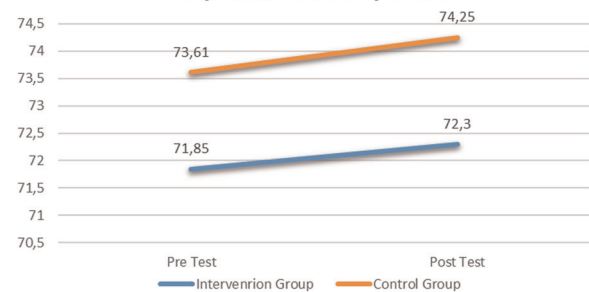
TABLE 3 Empathic Tendency Scale (ETS) and Attitudes Towards Disabled Person Scale (ATDS) scores before and after intervention in the two groups

Scale		Intervention group (n = 34)		Control group (n = 36)		Test		Value	
		Median	Median	p	p	U	p	Z	
ET	Before	70.00	70.00	–0.242	–1.857 ^a				
	After	70.00	70.00	–0.401	–1.633 ^b				
							0.688	0.102	
ATDP	Before	69.00	69.50	–0.295 ^a	–4.423 ^a				
	After	85.00	70.00	–4.042 ^a	2.333 ^b				
							<0.01	0.20	

Note: $p < 0.01$: Statistically significant.

^aBefore – After Intervention group.

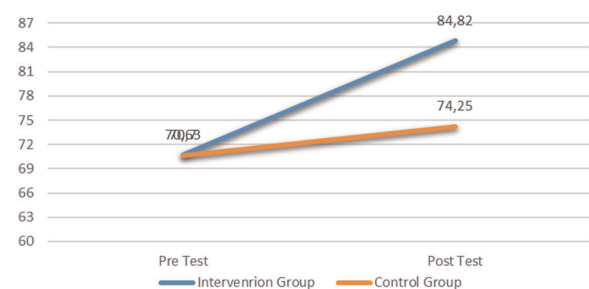
^bBefore – After Control group.

Toronto Alexithymia Scale**FIGURE 2** The score averages from Toronto Alexithymia Scale before and after interventions according to groups [Color figure can be viewed at wileyonlinelibrary.com]**Empathic Tendency Scale****FIGURE 3** The score averages from Empathic Tendency Scale before and after interventions according to groups [Color figure can be viewed at wileyonlinelibrary.com]

score after the disabled health course ($p < 0.001$; Figure 4). Also, there was a significant difference between the ATD scores before and after in the intervention group ($p < 0.001$; Table 2).

4 | DISCUSSION

The purpose of the study was to evaluate the effect of affective learning on alexithymia, empathy, and attitudes of nursing students toward disabled persons. We found that transformative learning

Attitudes Towards Disabled Scale**FIGURE 4** The score averages from Attitudes Toward Disabled Person Scale before and after interventions according to groups [Color figure can be viewed at wileyonlinelibrary.com]

activities carried out in a disabled health course changed nursing students significantly in terms of the level of alexithymia and their attitudes toward disabled people. However, no statistically significant change was found in their empathic tendency at the end of the course. Describing and distinguishing feelings to provide nursing care through quality and safe communication is important. It is difficult for alexithymic individuals who have difficulties in describing their own emotions to empathize with others and show a positive attitude.^{2,4} For this reason, new arrangements should be made to increase the emotional awareness of future nurses while equipping them with professional knowledge.²⁶

Nurses with emotional awareness can communicate more effectively with patients and increase the quality of nursing care.^{27–29} For this reason, nurses use emotional awareness skills, known as alexithymia, especially in the care of persons with physical or mental disabilities.^{1,16} Determining the alexithymia scores of nursing students during their education and taking the appropriate initiatives to increase emotional awareness for nursing students play an important role.^{12,14,15} There is a study in the literature showing that students need to be aware of their emotions to establish therapeutic communication with patients.²⁹ In the process of transformative learning, learners experience critical thinking, participate in reflective conversations and discussions in a complete, effective, and freeway, socialize and express their emotions to evaluate their beliefs or perspectives.^{14,15} The authors consider that the students in the intervention group improved their alexithymia scores. This result supports the first hypothesis on alexithymia. There are studies in the literature examining the alexithymia score of students and the factors affecting them.^{4,8,9} However, the authors could not find a study, where an intervention to improve alexithymia in students was made.

The studies on empathy in nursing students reported improved empathy skills in intervention groups. On the other hand, some studies^{30–32} found that there was no statistically significant change in the score of empathic tendency. Some of the studies suggested that^{28,29} this score decreased. There is another study showing that empathetic tendency was declined during nursing education.^{33,34} The empathic tendency is the emotional dimension of empathy and is an innate personality trait. It is associated with positive respect, sensitivity, and understanding of others' lives.^{28,32} Regardless of curriculum and teaching methods, the empathic tendency requires great attention for personality change.²⁸ Due to these aspects, it is very difficult to change, and this may be the reason for the lack of a significant change in empathic tendency score in the study.³⁵ According to these results, the second hypothesis on empathy was not approved.

In the study, whether the attitudes of nursing students toward persons with disabilities were different from the healthy persons was evaluated. The low scores may be interpreted as a disabled person is not only different but to some extent, they are also "despicable" or "worthless," signaling bias. It was determined that the mean ATDPS score of the students was 70.67 ± 7.97 before the course. Considering that the maximum score for the scale was 120, it can be considered that the students had a moderate score of attitudes

toward persons with disabilities. There are studies in the literature that have similar findings¹⁰ and that are not similar³⁶ to this finding. However, these studies suggested that nursing curricula should be structured to improve the positive attitudes of nursing students.^{10,36} Transformative learning enables individuals to gain a different perspective by experiencing events and changing their behaviors and attitudes by critically reflecting on negative situations. Based on the findings, the authors may suggest that adopting a learning method based on the transformative learning theory in disabled health courses is more effective for developing a positive attitude toward persons with disabilities compared to the traditional method applied to the control group. Therefore, the third hypothesis on attitudes toward disabled persons was proven. In a similar study, Choi and Song¹⁷ investigated the effect of a simulated exercise program for nursing students on attitudes toward and stereotyping disabled persons. According to the results, they found that the simulation activity was effective in correcting the stereotypical behaviors of students toward disabled persons, but it did not have a significant effect on attitudes.¹⁷ In the study conducted by Geçkil et al.¹⁶ on nursing students, it was found that empathy activities toward disabled persons had a positive effect on the attitudes of the intervention group. As in the study, these studies show the partial effect of empathy, simulation, and sensitivity activities added to the nursing curriculum on students' attitudes toward disabled persons.

5 | LIMITATIONS

The low number of participants and the lack of comparison with other disabled health training courses were the main limitations of our study. The development of affective learning skills requires long-term follow-up, but the study includes only post-course results. Moreover, the use of ETS may have limited the report of empathic tendency in nursing students. Although ETS is a valid and reliable instrument, it was not developed to measure learning, as noted by other authors.³⁷ Intervention to a certain group limits the generalizability of test results. Another limitation of the study is that missing data were not considered. Moreover, blinding of the researchers (Berna Dincer and Demet Inangil) and students was not performed. However, in randomized trials of nonpharmacological treatments, the double-blind method can be difficult to implement.³⁸ On the other hand, the random assignment of students to the groups, the presence of a control group, measurements before and after the course, and ensuring there was no difference between the groups in terms of descriptive characteristics were the strengths of the study.

6 | CONCLUSION

The results highlighted that the learning activities based on the transformative learning theory to ensure affective learning in disabled health courses had positive effects on reducing the students' alexithymia and concomitantly improving their attitudes toward

disabled persons; however, not their empathic tendency. In addition to this course, providing personalized support to develop empathic tendencies, to show positive respect, sensitivity, and understanding of others' lives may be useful. Nursing educators should provide affective learning for students to develop positive emotions, attitudes, and behaviors toward disabled persons. This is one of the important points that determine the quality of nursing education and nursing care.

7 | IMPLICATIONS FOR PSYCHIATRIC NURSING PRACTICE

According to the results of this study, we can state that affective learning methods can be used in developing and improving the sensitivity of nursing students toward persons with mental disabilities.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

The authors have confirmed that all of the authors meet the IC-MJE criteria for authorship credit (www.icmje.org/ethical_1author.html), as follows: Berna Dincer and Demet Inangil making substantial contributions to the conception or design of the work; Berna Dincer and Demet Inangil data collection, data analysis, and manuscript writing; Berna Dincer and Demet Inangil drafting the article or revising it critically for important intellectual content.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author on reasonable request.

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