

Research Article

Investigation of the Effect of Laughter Yoga on Stress-Coping Behaviors in Nursing Students' Starting University

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Received 22 December 2023; Accepted 29 April 2024; Published 27 May 2024

Academic Editor: Gianpiero Greco

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Aim. This study was aimed to investigate whether the practice of laughter yoga in nursing students who just started university can help them cope with stress. **Design.** An experimental randomized controlled study was conducted. **Methods.** The research was conducted with first-year students ($n = 38$) who were willing to participate in the study. The intervention group took part in six 45–50 minute laughter yoga sessions twice a week for three weeks. **Results.** The comparison of the mean and total scores obtained from the Coping Behavior Inventory and Physio-Psycho-Social Response Scale by the participants in the control and intervention groups before and after the implementation of the laughter yoga practices demonstrated that there was a statistically significant difference between the two tests in the intervention group and the difference was especially evident between the pre- and posttest scores obtained from the Coping Behavior Inventory. **Conclusions.** In this study, laughter yoga practice helped the participating nursing students who just started university to cope with stress. It can be recommended that laughter yoga should be integrated into the curriculum in schools where nursing education is provided as a way of coping with stress, that its use should be expanded, and that randomized controlled experimental studies in which its physiological and psychological effects in different groups are investigated with objective and subjective parameters should be conducted.

1. Introduction

College years are a period during which transition from adolescence to young adulthood takes place. During this period, individuals not only try to bear the responsibility of being a young adult but also experience difficulties of university life. First-year students who have just started university may experience confusion in a new, different, and unfamiliar environment and in the face of uncertain situations and may need psychological help. Among general problems experienced by students in Turkey are economic (scholarships, transportation, and pocket money), academic (future, lecturers, and courses), adaptation (cultural differences, environment, and city), social (university opportunities, friendship, and leisure), and other (accommodation, security, and nutrition) issues [1–3]. It has been reported that students, especially those coming from different provinces for university education, have difficulties in

adapting to the city in terms of transportation, climate, and city facilities. In addition, during the university preparation phase, young people who postpone their problems and leave the solution until after they settle into the university due to their success-centered family attitudes, try to cope with these problems in the university environment [2].

Nursing education is a planned education program with theoretical and clinical background. Students attending this program, such as other students, experience all the difficulties of university life. They are faced with problems specific to nursing education such as difficulties in adapting to professional courses, the stress of performing clinical practice for the first time, the fear of making errors in clinical practices, the thought that the practice areas are intense and stressful, anxiety related to the possibility to be exposed to occupational risks, and anxiety caused by witnessing death and dying patients during clinical practices and thus they try

to protect their physical and psychological health against the stress caused by all these problems [4–6]. These problems can negatively affect students' mental health while they adapt to university life, and students who cannot cope with them may fail their courses and may experience psychological and physical problems [4].

Coping strategies are specific efforts that individuals use to manage both behavioral and psychological stress so that they can tolerate, reduce, or minimize effects of stressful events. It is necessary for individuals to gain necessary skills enabling them to recognize their personal problems, to recognize the source of these problems, and to develop strategies that will strengthen their own well-being. In the world of medicine and psychology, it is argued that most diseases are caused by stress which aggravates the condition. Students may resort to alcohol, coffee, cigarettes, or other recreational drugs to reduce their stress. However, these substances used to relieve stress can exacerbate stress and worsen the health condition. Laughing and being in pleasant environments are among nonmedical stress reduction methods. Laughter is a positive sensation and seems like an effective and healthy way to cope with stress. In addition, laughter decreases stressor hormones in the blood and thus minimizes the adverse effects of stress [7–9].

2. Background

Laughter yoga is a combination of breathing techniques and laughter exercises consisting of the combination of laughing, relaxation, and breathing exercises. Therefore, it can be used to cope with stress [10]. It is one of the complementary therapies in medicine and aims to obtain laughing experiences that include positive results both physiologically and psychologically [5]. Laughter yoga is stated to affect general health positively, to improve sleep disorder symptoms, to decrease anxiety and depression levels, and to improve social functions in nursing students [4]. Results of several studies suggest that laughter yoga can be an effective initiative which enables new students to adapt to university environment and contributes to the protection and development of their mental health [4, 11].

Laughter yoga will be practiced by the Nursing Interventions Classification (NIC) authority at the University of Iowa, 2023. It was registered and took place in the latest version of NIC. As a NIC in this context, laughter yoga is effective in caring for both sick and healthy individuals; nursing is expected to be widely used in research and education [12].

In Turkey, several studies have been conducted on the use of laughter yoga in various populations; however, the number of studies in which the effect of laughter yoga on anxiety in nursing students is insufficient. It is expected that data to be obtained in the present study will make significant contributions to the use of laughter yoga as an evidence-based practice [4, 5, 13, 14].

3. The Study

3.1. Aim and Objective. In the present study, the aim was to predict whether the practice of laughter yoga in nursing students who just started university could help them cope with stress.

4. Methods

4.1. Participants and Data Collection. This experimental randomized controlled study was conducted between October 2022 and December 2022. The data for this study were collected through an extracurricular activity. The population of the research consisted of first-year students studying at the nursing faculty of a state university, over the age of 18 years and willing to participate in the study. The sample size of the study was calculated as 38 students using the G* Power 3.1 (power: 80%) considering a study in which the effect of laughter yoga was investigated. To minimize selection bias, participants for both the experimental and control groups were randomly selected using a lottery system. Of the 38 students, 19 were randomly assigned to the intervention group and 19 to the control group. While randomization was created with minimization, stratification was used for sex [11]. The study was carried out outside the exam period to prevent any influence of exam-related anxiety on the outcomes.

Exclusion criteria include the following: students not repeating the year, students participating in the study but then not wanting to participate in the laughter sessions, students not attending the sessions regularly, and students having participated in laughing yoga sessions previously.

Of the participants, 62 were excluded from the study. Among them, 36 did not attend sessions regularly (Figure 1). The environment where the application took place was free from external stimuli, such as noise and crowds. In addition, comfortable cushions were provided for the students to sit on.

4.2. Instruments

4.2.1. Student Information Form. The 19-item form was administered to determine the participating students' sociodemographic characteristics.

4.2.2. Physio-Psycho-Social Response Scale (PPSRS). The PPSRS was developed by Sheu et al. [15] and adapted into Turkish culture by Karaca et al. [16]. In the scale, there are 21 items whose responses are rated on a five-point Likert-type scale ranging from 0 to 4, and the following three sub-dimensions: social behavioral symptoms (items 2, 3, 4, 5, 8, and 11), emotional symptoms (items 1, 6, 7, 9, 10, 12, and 14), and physical symptoms (items 13, 15, 16, 17, 18, 19, 20, and 21). The minimum and maximum possible scores to be obtained from the overall PPSRS are 0 and 84, respectively. The minimum and maximum scores to be obtained from the social behavioral symptoms, emotional symptoms and physical symptoms subdimensions are 0 and 24, 0 and 28, and 0 and 32, respectively. A high score indicates that the person suffers from more symptoms and that he or she has a poor bio-psycho-social status. Cronbach's alpha value of the PPSRS was 0.91 in Karaca et al.'s study.

4.2.3. Coping Behavior Inventory (CBI). The CBI developed by Sheu et al. [15] and adapted into Turkish culture by Karaca et al. [16] consists of 19 items whose responses are

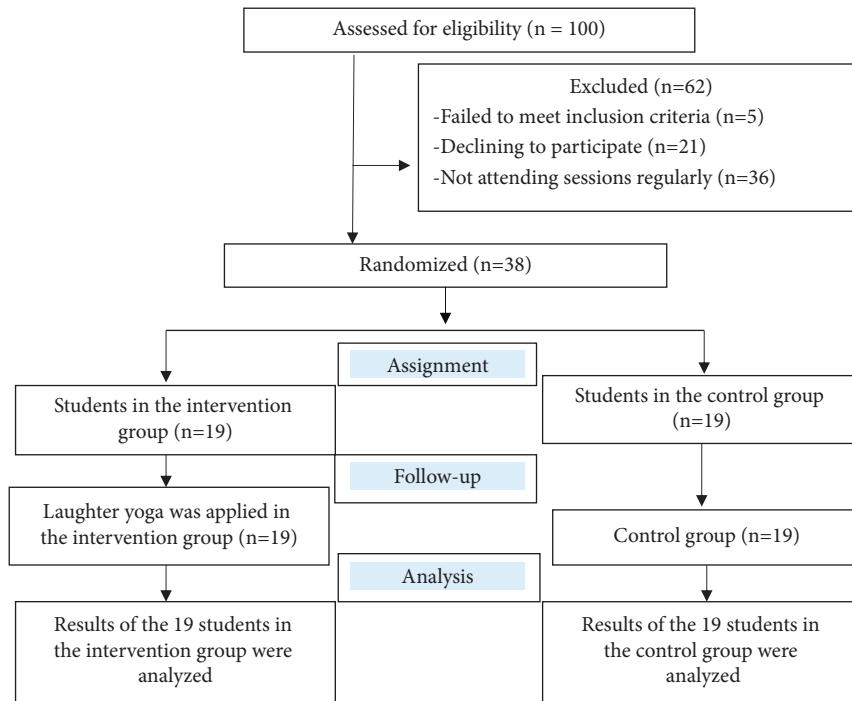


FIGURE 1: Consort diagram.

rated on a five-point Likert-type scale ranging from 0 (strongly disagree) to 4 (strongly agree), and the following four subdimensions: stay optimistic behaviors (items 1, 2, 6, and 8), transference behaviors (items 4, 5, and 13), problem solving behaviors (items 3, 7, 9, 10, 11, and 12), and avoidance behaviors (items 14, 15, 16, 17, 18, and 19). The minimum and maximum possible scores to be obtained from the overall CBI and its stay optimistic behaviors, transference behaviors, problem solving behaviors, and avoidance behaviors subdimensions are 0 and 76, 0 and 16, 0 and 12, 0 and 24, and 0 and 24, respectively. The higher the score obtained from a subdimension, the more frequently the person uses the coping method in that subdimension. Cronbach’s alpha value was 0.69 in Karaca et al.’s study.

4.3. Laughter Yoga Intervention. Laughter therapy intervention was a very important aspect of the present study. The history of laughter yoga studies dates back to 1964. Dr. Madan Kataria and his wife Madhuri Kataria created the laughter yoga program in 1995 by combining breathing exercises and laughter [4, 14, 17, 18]. During therapy, laughter is provided without any jokes, comedy, or humor, and it supports the realization of a heartfelt laughter that does not involve cognitive thinking in individuals. Laughter yoga is practiced in sessions including warm-up, breathing, and laughter exercises accompanied by applause and songs. Sessions are performed individually or in groups and last 30–45 minutes. Laughter yoga has the following five main parts: physical exercises (warm-up and deep breathing exercises), clapping hands, laughter exercises, discussion and observation, and

feedback. While the first part (warming up and clapping) helps reduce shyness between individuals and breathing exercises prepare the lungs for laughter [18].

4.4. Schedule of Laughter Therapy Intervention. This intervention included more than six laughter exercises. Laughter therapy was divided into three parts. The first part was physical exercises, the second part was actual laughter therapy exercises, and the final part was self-autosuggestions and discussion. Overall, this therapy made the participants’ mood always top-up and energetic.

4.4.1. Intervention Group (n=19). Before the study was started, the participating students in this group filled in the Student Information Form, Physio-Psycho-Social Response Scale, and the Coping Behavior Inventory. The researcher (one of the authors of the present study), who received the “Laughter Yoga Leader” training from an International Certified Laughter Yoga Instructor organization, conducted six 45–50 minute laughter yoga sessions twice a week which started on the eleventh week of the training (Table 1). The days and times of these sessions were arranged by taking the free hours in the students’ course schedules into account. The duration and number of laughter yoga sessions were determined by the researcher in line with the literature [20, 21]. The participants filled in the same scales again right after the laughter yoga practice was completed.

4.4.2. Control Group (n=19). The students in the control group underwent no intervention during the study. Before the study was started, they filled in the Student Information

TABLE 1: Daily schedule of laughter therapy session.

No	Nature	Timing (minutes)
1	Physical exercise (warm-up and deep breathing exercises)	5–8
2	Clapping exercise	2–3
3	Laughter exercise	20–25
4	Discussion and observation	6–8
5	Feedback	4–6

[17, 19].

Form, Physio-Psycho-Social Response Scale, and the Coping Behavior Inventory. After the three-week application in which the intervention group took part was completed, the participants in the control group filled in the same scales again. After the data were collected, the participants in the control group took two sessions of laughter yoga led by the researchers so that they could be acquainted with the laughter yoga practice. However, their practices were not evaluated.

4.5. Statistical Analysis. The descriptive and sociodemographic characteristics of the participants were given as percentage distributions. The chi-square test was used for the homogeneity of the groups. In data analysis, the dependent samples *t* test, independent samples *t* test, Friedman test, Mann–Whitney *U* test, and Wilcoxon test were used. The analysis of variance (ANOVA) was used to compare pretest and posttest measurements.

4.6. Ethical Issues. The Faculty of Nursing and University approval for this study was obtained from the relevant Human Research Ethics Committee (Protocol No.: REDACTED). All the participants and scale holders provided written consent for their data to be used in this study. In order to protect the privacy and security of the respondents, not their names but pseudonyms were used. The research was conducted in accordance with the Declaration of Helsinki (World Medical Association, 2013).

5. Results

Of the students, 50% were in the control group and 50% were in the intervention group. Of the students in the intervention group, 73.4% were women, 73.7% did not have a chronic disease, and 57.9% voluntarily preferred the department. Of the students in the control group, 84.2% were women, 73.7% did not have a chronic disease, and 42.1% voluntarily preferred the department.

6. Discussion

Nursing students' exposure to long-term and uncontrollable stress in their learning processes negatively affects not only development of their professional identity but also their health, and may reduce their academic achievement by impairing their thinking and decision-making competencies. It is important to structure motivational initiatives so that the student can use strategies to cope with these negative

effects, to benefit from educational life at a desired level, to develop a positive professional identity, and to protect his or her health [4, 16]. Laughter yoga is a nonpharmacological practice including a series of exercises that combine laughter for no reason with yoga and breathing techniques that can be performed by students on their own in daily life. As emphasized in several studies, laughter yoga creates a good mood in people, contributes to the creation of a happy environment, and improves their adaptation to their environment [12–14].

The sociodemographic characteristics of the students participating in the study were determined and the results are given in Table 2. Their mean age was 18.736 ± 0.794 years. According to the results obtained, the comparison of the sociodemographic characteristics of the students in the control and intervention groups demonstrated that there was no statistically significant difference between them in terms of all the variables except for the place of residence variable ($p > 0.05$).

In Table 3, the comparison of the mean scores the participating students obtained from the Coping Behaviors Inventory and Physio-Psycho-Social Response Scale and their subdimensions is given ($p > 0.05$). The results of the analysis revealed that there was no statistically significant difference between the intervention and control groups within the scope of the subdimensions of the scales used in this study ($p > 0.05$).

Our review of the literature demonstrated that laughter yoga significantly reduced participating nursing students' stress levels [22, 23]. In a study in which nursing students practiced laughter yoga for eight sessions for four weeks, two sessions a week, laughter yoga reduced their anxiety and depression levels [11]. Gulera and Manta [6] conducted a study to determine the effectiveness of laughter yoga in reducing stress levels among nursing students. The results showed that stress scores in the experimental group were lower compared to those in the control group [6].

In another study, laughter yoga practiced with nursing undergraduate students before simulation training reduced their state anxiety and perceived stress levels. In addition, the mean scores of the participants in the intervention group for the student satisfaction and self-confidence in learning were significantly higher than those of the participants in the control group [24]. It has been reported that laughter yoga practice can be an effective method to help first-year nursing students cope with stress [3]. Laughter yoga has been found to have a positive impact on both the brain and the autonomic nervous system, resulting in physiological and emotional changes. This is due to the release of endorphins

TABLE 2: Sociodemographic characteristics of students.

Characteristics	Intervention Group (n = 19)		Control Group (n = 19)	
	n	%	n	%
<i>Gender</i>				
Male	4	26.3	3	15.8
Female	15	73.7	16	84.2
<i>Father's education level</i>				
Elementary school	3	15.8	5	26.3
Secondary school	4	21.0	6	31.6
College/university	12	63.2	8	42.1
<i>Mother's education level</i>				
Elementary school	4	21.0	5	26.3
Secondary school	9	47.4	9	47.4
College/university	6	31.6	5	26.3
<i>Perceived income level</i>				
Income more than expenses	8	42.1	9	47.4
Income equal to expenses	9	47.4	8	42.1
Income less than expenses	2	10.5	2	10.5
<i>Who affected the choice?</i>				
Family	7	21.0	2	10.5
School/teacher	4	21.1	4	21.0
Friends/immediate circle	3	15.7	3	15.8
Of his or her own free will	8	42.1	10	52.7
<i>Region of residence in Turkey</i>				
Marmara region	8	42.1	9	47.4
Aegean region	5	26.3	6	31.6
Southeastern Anatolia region	2	10.5	2	10.5
Eastern Anatolia region	4	21.1	2	10.5
<i>Family type</i>				
Nuclear family	12	63.2	8	42.1
Extended family	7	36.8	11	57.9
<i>Number of siblings</i>				
1-3	15	89.0	17	89.5
≥4	4	11.0	2	10.5
<i>Place of residence</i>				
Home with the family	5	26.3	4	21.1
Dormitory	12	63.2 ^a	4	21.1
Home shared with friends	2	10.5	11	57.8 ^a
(Ψ: 9.654, p = 0.022)*				
<i>Economic status</i>				
Good	14	73.6	13	68.4
Bad	5	26.4	6	31.6

Ψ: chi-square test; ^a: variable with more than one response; * p < 0.05; ^a: Bonferroni post hoc test.

TABLE 3: Distribution of the mean scores the participating students obtained from the Coping Behavior Inventory and Physio-Psycho-Social Response Scale.

	Intervention group Mean ± SD	Control group Mean ± SD	Ψ _Z	p
<i>CBI</i>				
Stay optimistic	9.2632 ± 2.210402	9.2632 ± 2.37679	0.025	0.980
Transference	6.4211 ± 1.67716	6.7368 ± 1.48482	2.050	0.346
Problem solving	13.6842 ± 3.88805	14.000 ± 3.65148	-0.638	0.523
Avoidance	11.7895 ± 5.77907	10.000 ± 5.54777	2.861	0.428
Test statistics	Ψ ² X ² = 3.909, p = 0.142	Ψ ² X ² = 3.600, p = 0.165		
<i>PPSRs</i>				
Social behavioral symptoms	9.3158 ± 8.31835	12.5263 ± 3.76698	0.362	0.428
Emotional symptoms	10.0789 ± 5.45934	11.6053 ± 4.90747	-0.865	0.387
Physical symptoms	9.3158 ± 8.31835	13.2632 ± 7.0071	-0.577	0.564
Test Statistics	Ψ ² X ² = 12.714, p = 0.257	Ψ ² X ² = 2.528, p = 0.258		

Ψ: Friedman test; Ψ: Mann-Whitney U test; * p < 0.05; CBI: Coping Behavior Inventory; PPSRS: Physio-Psycho-Social Response Scale.

during the practice which helps to relax the body, reduce stress levels, and provide a feel-good sensation. In addition, laughter yoga has shown to reduce symptoms of depression, anxiety, and stress and to promote positive emotions [19, 25]. In their study, Eraydın and Alpar [26] investigated effects of laughter yoga on anxiety, life satisfaction, and psychological well-being levels of nursing students during the COVID-19 pandemic. The comparison of the results of the two groups revealed a significant increase in the life satisfaction and psychological well-being scores of the participants in the intervention group, and a significant decrease in their anxiety scores [26]. In their study in which breast cancer patients participated in four sessions of laughter yoga practice, Kim et al. [21] reported that laughter yoga practice significantly reduced anxiety and depression levels in the intervention group but did not cause any change in the control group. The analysis of the physiological process of laughter yoga practice in the body revealed that laughing increased the release of endorphins, reduced stress, and led to mental and physical relaxation [14]. This result suggests that laughter yoga practice can be interpreted as one of the methods that help the person manage stress indicated in the stay optimistic behaviors and problem solving behaviors subdimensions.

The analysis of the posttest mean scores obtained from the subdimensions of the Coping Behavior Inventory and Physio-Psycho-Social Response Scale by the students in the control and intervention groups after the application demonstrated that there was a statistically significant difference between the groups in terms of the scores they obtained from the stay optimistic behaviors and problem solving behaviors subdimensions of the coping behavior inventory ($p < 0.05$) (Table 4). The results of the Bonferroni post hoc test performed to determine from which group the difference stemmed demonstrated that there was a significant difference in favor of the intervention group. The analysis of the scores obtained from the Physio-Psycho-Social Response Scale and its subdimensions revealed that there was a significant difference between the groups in terms of the scores they obtained from the physical symptoms subdimension, and that the difference was in favor of the intervention group according to the Bonferroni post hoc test. The findings of the present study are consistent with those in the literature [14, 22, 23].

The comparison of the mean and total scores obtained from the Coping Behavior Inventory and Physio-Psycho-Social Response Scale by the participants in the control and intervention groups before and after the implementation of the laughter yoga practices demonstrated that there was a statistically significant difference between the results of the two tests in the intervention group and the difference was especially evident in terms of the scores they obtained from the Coping Behavior Inventory; however, there was no significant difference between the two tests in terms of the scores obtained from the Physio-Psycho-Social Response Scale (Table 4). In his book "Laugh for No Reason," Dr. Kataria [27] draws attention to the fact that laughter yoga increases an individual's self-confidence and self-esteem. In their study (2015) in which the participants joined three

sessions of laughter yoga practice, Kim et al. stated that laughter yoga significantly increased the participants' self-esteem. In a study conducted to investigate the effect of laughter therapy on self-concept among adolescents with physical disabilities, the focus was on the participants' physical, social, temperamental, educational, moral, and intellectual self-concepts.

Nursing students often have to deal with a heavy school workload and clinical practice, which can make it more challenging for them to adapt to their roles, prepare for exams, and feel confident in their ability to become qualified nurses. Therefore, it is important to identify and leverage the strengths of nursing students to promote their subjective happiness [19]. In another study, it was concluded that the laughter therapy was extremely beneficial in increasing the self-concept of adolescents with physical disabilities [28].

Personality traits, physical and mental health, life experiences, learning history, social support network, socioeconomic status, expectations from life, and cultural values differ from one person to another, which affects the person's bio-psycho-social response to a stressful situation positively or negatively. When professional help is planned especially for those who have difficulties in coping with stress, their life stories, cultural background, socioeconomic status, family dynamics, the environment they live in, their personal expectations, and communication skills should be taken into account [29]. In the present study, no statistically significant results were determined between the groups in terms of their pre- and postintervention bio-psycho-social response scores (Table 5). Factors such as nursing students being from different regions, living in places different from each other, having different family structures and income levels, being in the first year of university, and being responsible for non-branch courses besides nursing in the first semester may have led to this result.

6.1. Strength and Limitation of the Work. The present study has some limitations. First, there is no blindness and the sample size was small. Second, the results obtained from the present study are applicable only to the first-year nursing students studying at a state university where the study was conducted and cannot be generalized to all nursing students. Third, in this study, outcomes of a laughter yoga intervention were analyzed with one repeated measurement. Further studies should be conducted to find out whether the intervention has lasting effects on student outcomes.

6.2. Relevance for Clinical Practice. In the present study, laughter yoga practice in nursing students was found to be helpful in managing stress. Clinical areas contain many stress factors for nursing students. Orientation to the clinical field, team collaboration, communication with the patient, and skill practice can increase stress. Students who practice laughter yoga on their own can cope with stress more easily, which increases their compliance with the clinic, prevents stress-related malpractices, and protects patient safety.

TABLE 4: Comparisons of the mean scores the participating students obtained from the Coping Behavior Inventory and Physio-Psycho-Social Response Scale.

Variables	Intervention group Mean ± SD	Control group Mean ± SD	U _Z	p
<i>CBI</i>				
Stay optimistic	9.3684 ± 2.40856	8.7368 ± 2.40005	-2.131	0.033*
Transference	6.4211 ± 2.43392	6.3158 ± 2.66776	-0.954	0.340
Problem solving	15.1053 ± 4.47083	13.6316 ± 4.65726	-2.549	0.011*
Avoidance	7.3884 ± 4.03058	8.3158 ± 4.38498	-0.324	0.746
Test Statistics	$\Psi X^2 = 95.410, p = 0.001^*$	$\Psi X^2 = 98.601, p = 0.108$		
<i>PPSRS</i>				
Social behavioral symptoms	9.0526 ± 3.84108	9.3158 ± 8.31835	-0.893	0.372
Emotional symptoms	10.0789 ± 5.45934	10.0789 ± 5.45934	-1.240	0.215
Physical symptoms	9.3158 ± 8.31835	9.3158 ± 8.31835	-0.350	0.026*
Test Statistics	$\Psi X^2 = 16.403, p = 0.003^*$	$\Psi X^2 = 71.841, p = 0.210$		

SD: standard deviation; Ψ : Friedman test; U: Mann-Whitney U test; *p < 0.05; CBI: Coping Behavior Inventory; PPSRS: Physio-Psycho-Social Response Scale.

TABLE 5: Intergroup comparisons of the mean scores the participating students obtained from the coping behavior inventory and Physio-Psycho-Social Response Scale.

Scales	Pretest-posttest scale mean scores	Intergroup		Difference	
		Control group Mean ± SD (min-max)	Intervention group Mean ± SD (min-max)	Ψ	p
CBI	Pretest	18.71 ± 15.41 (26-55)	20.74 ± 6.80 (26-55)	0.476	0.490
	Posttest	18.82 ± 8.26 (22-52)	20.18 ± 8.26 (22-52)	0.145	0.703
	Test Statistics	W = 0.485, p = 0.359	W = 0.147, p = 0.029*		
PPSRS	Pretest	18.71 ± 14.41 (6-60)	20.29 ± 15.41 (6-60)	0.193	0.661
	Posttest	18.89 ± 16.04 (6-63)	20.11 ± 16.04 (6-63)	0.113	0.736
	Test statistics	W = 0.355, p = 0.337	W = 180.71, p = 0.332		

SD: standard deviation, Ψ : Friedman test, U: Mann-Whitney U test, *p < 0.05 CBI: Coping Behavior Inventory, PPSRS: Physio-Psycho-Social Response Scale.

7. Conclusion and Recommendations

In conclusion, in the present study, the practice of laughter yoga helped nursing students who just started university to cope with stress. It is a nonpharmacological implementation that students can apply on their own in daily life. It can be recommended that laughter yoga should be integrated into the education program of the first-year students of the Nursing Department as an elective course, that laughter clubs in schools where nursing education is given should be established, that laughter yoga should be integrated into nursing roles to protect and improve health, that its use should be spread, and that randomized controlled experimental studies in which physiological and psychological effects of the laughter yoga intervention are investigated in different groups with objective and subjective parameters should be conducted.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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