OFFICIAL TITLE: EFFECTS OF LAUGHTER THERAPY ON RESPIRATORY FUNCTIONS AND GERIATRIC PAIN IN ELDERLY INDIVIDUALS

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STUDY PROTOCOL

Structural and functional changes occur with aging, and bodily functions gradually decline. One of the body systems affected by aging is the respiratory system. During the aging process, the loss of elasticity in lung tissue, weakening of respiratory muscles, and inefficient gas exchange lead to a decrease in respiratory capacity. Consequently, this causes shortness of breath, increased risk of infection, and a decrease in quality of life. Changes in body systems also cause chronic pain in elderly individuals. Pain-related weakness, functional losses, and the use of multiple medications are observed. Complementary treatment approaches can be used to reduce the symptoms of age-related problems and promote healthy aging in response to these changes caused by aging. This study aims to examine the effect of laughter therapy, a complementary treatment method, on respiratory functions and geriatric pain in elderly individuals.

The study population consists of individuals aged 60 and over, members of a Retirement Club affiliated with the Ankara Metropolitan Municipality, who agree to participate in the study and who do not have any visual, auditory, intellectual, or orthopedic disabilities. The sample consists of 64 individuals who meet the inclusion criteria. The sample will be randomly selected using a true random number selector (https://www.random.org/). Random selections will be planned in a sequential manner, with one intervention group and one control group. Selection will continue until the sample size is complete. As part of the pre-test, individuals in both the intervention and control groups will complete a demographic information form, a Pulmonary Function Test, oxygen saturation measurement with a pulse oximeter, respiratory count, and the Geriatric Pain Scale. The intervention group will receive 8 sessions of laughter therapy, twice a week for 4 weeks. The control group will not receive any intervention. As part of the post-test, both the intervention and control groups will receive... Pulmonary function tests, oxygen saturation measurement with pulse oximeter, respiratory rate, and the Geriatric Pain Scale will be administered. Research data will be collected using the Statistical Package . for Social The data will be analyzed using the Sciences (SPSS) 25.0 program.

Laughter therapy is a complementary medicine technique that combines laughter without a specific reason with breathing exercises. It is a free, accessible, effective, and enjoyable intervention for individuals. Laughter therapy is recognized internationally as a nursing intervention in the Classification of Nursing Interventions. Through its breathing exercises, laughter therapy increases lung capacity and ensures efficient gas exchange. It is

believed that laughter therapy, which includes breathing exercises, can also lead to positive improvements in respiratory parameters. Laughter therapy is considered an effective intervention in improving respiratory function and reducing pain.

This study aimed to evaluate the effects of laughter therapy on respiratory function and geriatric pain in elderly individuals.

H_0 Laughter therapy has no effect on respiratory function in elderly individuals.

H_0 Laughter therapy has no effect on geriatric pain in elderly individuals.

Randomization and Blinding

A Personal Information Form containing inclusion and exclusion criteria will be administered to elderly individuals registered at the Dikmen Retirement Home. A sample group will be formed from individuals meeting the inclusion criteria using a simple randomization method. A list will be created by numbering the questionnaires of individuals meeting the inclusion criteria. The minimum and maximum numbers in the list will be randomly selected from a true random number generator website (https://www.random.org/). Random selections are planned in a sequential manner, with one intervention group and one control group. Selection will continue until the sample size is complete.

Preventing Bias

To prevent potential biases in the sample, the inclusion and exclusion criteria for participants were clearly defined **.** Researcher and participant blinding will not be used in this study . The intervention will be conducted by the researchers, and participants will know which group they are in because an intervention will be used. To prevent measurement bias, pre-tests and post-tests will be administered to participants using the same measurement tools under the same conditions.

and characteristics of the research : The Ankara Dikmen Retirement Home is located in the Dikmen Valley and operates as a single-story café. Retired elderly individuals use this café to socialize with their peers, drink tea and coffee, and chat.

Inclusion Criteria: Individuals who are members of the Dikmen Retirees' Club, agree to participate in the research, are 60 years of age or older, have no auditory, visual, intellectual, or

orthopedic disabilities that would prevent participation, and do not smoke or consume alcohol will be included in the study.

Exclusion Criteria: Being under 60 years of age and having conditions that would prevent the application of laughter therapy (having undergone abdominal surgery within the last three months, glaucoma, hernia , and epilepsy), and being a smoker or alcohol user.

Exclusion criteria from the study : Failing to adhere to the research plan, wanting to withdraw from the research after becoming involved.

Data Collection Tools

Data; Personal Information Form, Pulmonary Function Test, oxygen saturation measurement with pulse oximeter , respiratory counting, and Geriatric Pain Scale will be used to collect data.

Personal Information Form

This form will ask individuals specific questions about their gender, age, education level, occupation, marital status, income level, chronic disease status, regular medication use, smoking habits, alcohol use, whether they have undergone surgery in the last 3 months, pain level and intensity, and whether they have a hernia, epilepsy, or glaucoma.

Pulmonary Function Test

It is used to assess respiratory function. It is performed to determine the degree and extent of existing respiratory dysfunction, to make a diagnosis, to measure response to treatment, and to evaluate the response to exercise. Respiratory function decreases with age (Coşkun, 2015). In this study, the pulmonary function test will be used to evaluate the respiratory functions of the elderly group before and after laughter therapy application .

Spirometry: This is the most commonly used basic pulmonary function test (PFT) for evaluating respiratory function . It is based on measuring the changes in airflow or volume caused by breathing in and out as a derivative of time. Researcher Nisa Nur Akbal, a nurse at Ankara Bilkent City Hospital, has sufficient knowledge and skills in the use of spirometry. The test involves measuring airway and lung volumes with a spirometer during a forced expiratory maneuver after the patient has taken a deep, full inspiration. The expiration time should be at

least 6 seconds. If the patient coughs and the test is interrupted, the test should be repeated after at least 20 minutes of rest. The test is performed at least 3 times; performing it more than 8 times is not recommended (Ulubay et al., 2017).

General Recommendations

1. The patient must rest for at least 15 minutes before the test.

2. Because strenuous breathing exercises can cause dizziness, it is recommended that the test be performed in a seated position.

3. It should be explained that breathing should be done at its maximum capacity.

4. The patient should be given a detailed explanation of how the test will be performed. The mouthpiece should not be covered with the tongue or teeth to prevent air leakage.

5. After positioning the patient, a nose clip is placed, a mouthpiece is fitted, and with the lips closed, rapid and deep inspiration is followed by maximum expiration until the lungs are emptied (Ulubay et al., 2017).

Saturation Measurement with Pulse Oximeter

Oxygen saturation indicates the oxygenation rate of the blood. Oxygen, along with inhaled air, passes from the lungs into the bloodstream. The oxygen saturation level of the blood, transported to tissues and organs via the circulatory system, is vital for organ function. In a healthy adult, oxygen saturation should be between 95% and 100%. Oxygen saturation will be measured by the researcher using a pulse oximeter of the same brand . It is planned to apply to our university's Scientific Research Projects (BAP) for this thesis study. With BAP support, a triflo , a spirometry device, and a pulse oximeter will be purchased.

Geriatric Pain Scale

Original scale name: Geriatric Pain MEASURE is a twenty-four-item multidimensional scale developed by Ferrell et al. in 2000 (Ferrell et al., 2000). Translated into Turkish... The adapted scale is 5-dimensional, like the original scale. It includes subscales of pain-related withdrawal (items 19, 20, 22, 23), pain intensity (items 1, 2, 3, 4, 5, 6), pain from movement

(items 9, 10, 11, 12), pain from strenuous activities (items 7, 8, 18, 21, 24), and pain from other activities (items 13, 14, 15, 16, 17). The scale contains two open-ended questions (items 19 and 20). These questions are scored between 0 and 10. For the other 22 items, each "Yes" answer is summed and multiplied by 2.38. The total score can range from 0 to 100. A score between 0 and 29 indicates mild pain, a score between 30 and 69 indicates moderate pain, and a score of 70 or higher indicates severe pain. The total Cronbach's Alpha value of the scale is stated as 0.85 (Dursun and Bektaş, 2017).

Data Collection:

The data collection process will be conducted at the Ankara Metropolitan Municipality Dikmen Retirement Home after obtaining ethical committee and institutional permission. Participants will be included in the study on a voluntary basis after the researcher informs them about the research at their respective institutions. Individuals who agree to participate will be given an informed consent form by the researcher at the Retirement Home, and their consent will be obtained. The data collection tools to be used in the research will be administered face-to-face to the participants by the researcher at the Retirement Home, at times convenient for the participants. At the beginning of the application process, each participant will be informed and explained about the principles of voluntarism, ethical processes, the purpose of the research, data analysis, record keeping, and participants' rights. Thus, the research will be conducted with voluntary participants.

Pre-Test: Individuals in both the intervention and control groups will be administered a Demographic Information Form, a Pulmonary Function Test, oxygen saturation measurement with a pulse oximeter , respiratory rate, and the Geriatric Pain Scale. The pre-test phase of the study will be completed upon administration of these forms and scales.

Initiative: Laughter Therapy sessions will be conducted by Nisanur Akbal, a researcher with Laughter Therapy Leadership . Laughter therapy will be administered face-to-face in a group setting in the garden of the Dikmen Retirement Home after a pre-test for the intervention group. A meeting will be held with the elderly individuals one week before the start of the laughter therapy sessions to share information about laughter therapy and to explain and demonstrate the use of the triflo breathing exercises . Laughter therapy will be applied to the intervention group twice a week, for 45 minutes each session, for four weeks and eight

sessions in total. No intervention will be applied to the control group after the pre-test. After the completion of this thesis, laughter therapy may also be applied to individuals in the control group on a voluntary basis if they request it. Since the sample group does not receive any routine intervention, the participants in the control group also do not receive any routine intervention.

Final Test: After 8 sessions of laughter therapy, individuals in both the intervention and control groups will undergo Pulmonary Function Test, oxygen saturation measurement with pulse oximeter , respiratory rate, and Geriatric Pain Scale.

Laughter Therapy Session Plan:

A laughter therapy session lasts approximately 40 minutes and consists of four main parts: deep breathing exercises, warm-up exercises, childlike play, and laughter exercises. Warm-up exercises prepare the body, and breathing exercises prepare the lungs for laughter. Childlike play and laughter exercises may vary depending on the choices of the laughter therapy leader (Kataria, 1999).

Part 1: Deep Breathing Exercises (5-10 Minutes)

This section focuses on breathing exercises using diaphragmatic breathing. Raise your hands, take a deep inspiration, hold your breath for 4-5 seconds, and then exhale by pursing your lips. With each inhale, the exhalation time should be longer than the inspiration time. To enhance the effectiveness of these breathing exercises, the Triflo breathing exercise device will be used in this section.

Triflo Breathing Exercise Device: Triflo is a breathing exercise device with 3 different levels of respiratory resistance. The device has a plastic body, is very easy to use, and is ergonomically designed so users can easily carry and operate it. The main purpose of using Triflo is to strengthen respiratory muscles, increase respiratory capacity, and reduce fluid accumulation in the airways after surgery. In this study, the Triflo breathing exercise device will be used to increase the respiratory capacity of elderly individuals. (The Triflo breathing exercise device will be provided to each participant with BAP support.) (The use will be demonstrated by the researcher at an information meeting to be held one week before the start of laughter therapy.)

Triflo exercise: This exercise works on the principle of moving balls located between channels through breathing. Triflo breathing exercise equipment is available in models with single, double, triple, and quadruple balls; this exercise will use the triple ball model. Participants will

be in a seated position, with the breathing exercise equipment in an upright position. After exhaling normally, the lips are tightly placed over the mouthpiece to prevent air from remaining. A quick inhale is taken, fast enough to lift the first ball. After exhaling, a short pause is taken, and a normal inhale is taken. Gradually, the second and third balls are also attempted to be lifted.

Section 2: Warm-up Exercises (10 Minutes)

Holding hands parallel to each other, with palms and fingers touching, aims to stimulate acupuncture points. To increase energy levels, a rhythmic 1-2 and 1-2-3 clapping is necessary. Once the group's movements are synchronized, the rhythmic sounds of Ho-Ho and Ha-Ha-Ha are added to these clapping movements.

Chapter 3 Childish Games (10 Minutes)

This section aims to elicit laughter through childlike games. After each game, the words "Very good," "Very good" are repeated accompanied by applause, and group motivation is increased by raising hands in a 'Y' shape and shouting "Hey." This section ends after 10 minutes, depending on the group's energy level.

Chapter 4: Laughter Exercises (10 Minutes)

This section includes laughter exercises such as greetings, strawberry milk, conductor, hot soup, lion, aloha , appreciation, laughter lotion, elevator, cream cake, and popping balloon. The aim of these exercises is to induce laughter without reason and to encourage the group to laugh. At the end of the section, relaxation is achieved with deep breathing exercises for approximately three minutes, and the laughter therapy session concludes.

Data Analysis

Research data from the Statistical Package for Social The data will be analyzed using the SPSS 25.0 program. Numbers and percentages will be used to present the descriptive characteristics of individuals . The Kolmogorov -Smirnov test will be performed to determine the normality of the data distribution . For variables with two groups, the independent samples t-test will be used. For variables with at least three or more groups, the Mann Whitney U test (a non-parametric test) and the Kruskal -Wallis H test (a one-way analysis of variance) were considered. In cases where the variances are not homogeneously distributed in one-way analysis

of variance, the Welch test (a robust test in one-way analysis) was considered. Heteroscedastic ANOVA will be used (Harrison et al., 2021; Jan and Shieh , 2013; Yılmaz and Özdemir , 2016). In the analysis of differences and changes between two measurements over time in groups, the paired samples t-test will be used for groups that meet the assumption of normal distribution. samples t-test), Wilcoxon signed-rank test (Wilcoxon) for groups that do not meet the assumption of normal distribution signed It is foreseen that the rank test will be used. Also, in the analysis of differences and changes between three or more measurements over time in groups, one-way analysis of variance (RANOVA) for repeated measures in groups that meet the assumption of normal distribution will be used . measures For groups that do not meet the assumption of normal distribution , the Friedman test will be used. For comparisons between intervention and control groups, the independent t-test and mixed-design analysis of variance will be used. The statistical significance level in this study will be accepted as $p < 0.05$.

Limitations of the Study:

This study is limited to individuals in the retirees' local community who agreed to participate. The results of this study can only be generalized to the individuals included in the study. The limitation of this study is that its results are limited to the 8-week period in which the study was conducted.