

COMBINED MODALITY TREATMENT OF CLASSICAL MUSIC AND LAVENDER AROMATHERAPY APPLICATION FOR THE MANAGEMENT OF CANCER RELATED-PAIN IN ADULT PATIENT UNDERGOING CHEMOTHERAPY

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Abstract

Background: Pain is one of the most distressful symptoms experienced patients with cancer. Music and aromatherapy are commonly health care modality treatments in reducing pain, however, the effectiveness of combining these treatments for cancer related pain has not been fully established. **Purpose:** The aim of this study was to determine to whether combined classical music and lavender aromatherapy can be a pain relief in cancer patients. **Methods:** A quasi-experimental research design with one group pre- posttest design was performed in 11 patients with cancer undergoing chemotherapy. Pain was evaluated using the numeric rating scale before therapy and 30 minutes after. The data analysis used paired t-test. **Results:** The therapeutic approach was well accepted by the overall participants. Patients who received the combination of classical music and lavender aromatherapy have significant improvement in decreasing pain symptom with p value 0.001. The mean score before therapy was 6.55 and after therapy was 4.82. **Conclusion:** Classical music and lavender aromatherapy may be useful in the management of pain in cancer patients. **Suggestions** For further researchers, it can be added take more samples and provide control group in the study. We recommend that health providers provide the combination of classical music and lavender aromatherapy as an intervention to relieve pain in cancer patients.

INTRODUCTION

Cancer is a disease which is caused by abnormal cell growth inside the body (1-3). Cancer cells will grow rapidly and uncontrollably, infiltrate the surrounding tissue (invasive) and spread through connective tissue, blood, and attack organs and the spinal cord. The accumulation of these cells irritate and damages normal tissue, causing damage in the organs that occupied (4-7). Cancer has a significant impact on quality of life, with patients experiencing physical, psychosocial, spiritual, and other problems (8,9). Pain is a common physical symptom cancer (10,11). A sharp, stabbing pain, that can vary as mild to severe, is one of the symptoms of cancer patients (12,13). For patients, pain is the most feared symptom because it is a major factor in decreasing the quality of life (14). Previous literature showed that cancer pain is a priority that can be treated first (15).

According to the International Association for the Study of Pain (IASP), pain is defined as an unpleasant feeling that originates from a specific area of the body that is dependent or independent of tissue damage and is related to previous experiences (16). 50-70% of cancer patients experience pain. Cancer pain is predominantly neuropathic, psychological, social and spiritual in relation to nociceptive pain (17). Continuous pain can reduce quality of life and physical function, increase fatigue, and interfere with daily and social activities in terminally ill patients (18).

In general, there are two types of pain management: pharmacological and non-pharmacological. Pharmacological pain management includes collaborative actions between nurses and doctors in administering drugs that are able to relieve pain sensations, while non-pharmacological includes nurses' independent actions to relieve pain using pain management with distraction measures (19,20). Pharmacological treatments that are usually used to relieve pain include analgesics, which are divided into two groups, non-narcotic analgesics and narcotic analgesics (21). Music therapy is one of the non-pharmacological treatment options (22). Music therapy is a form of wellness therapy that uses music and musical activities to assist people with physical disabilities overcome problems with the physical, psychological, cognitive, and social needs (23). In addition, there are adverse effects such as pain relaxation. Classical music has been shown to be effective in the treatment of pain in various studies. This is because classical music has a tempo that is in harmony with the human heartbeat, range from 60 - 80 beats per minute (24).

Lavender aromatherapy is another non-pharmacological therapeutic option (25). Sandalwood, basil, cinnamon, ylang, citrus, jasmine, cloves, lavender, rose, and jasmine are among the aromatherapy choices. Aromatherapy complementary therapy with lavender essential oil is probably the most popular treatment in pain control, as lavender has anticonvulsant, antidepressant, anxiolytic, and calming properties (26). The benefits of lavender aromatherapy in 100 grams of lavender flowers contain several ingredients such as: essential oil (1-3%), alpha-pinene (0.22%), camphene (0.06%), beta-myrcene (5.35%), p-cymene (0.3%), limonene (1.06%), cineol (0.51%), linalool (26.12%), borneol (1.21%), terpinen-4-ol (4.64%), linalyl acetate (26.32%), geranyl acetate (2.14%), and caryophyllene (7.55%). When people inhale aromatherapy, the active ingredients trigger the hypothalamus (pituitary gland) to secrete endorphins. Endorphins are substances that cause feelings of well-being, relaxation, and happiness (27). Furthermore, the active ingredients linalool and linalyl acetate contained (28).

According to a preliminary study of five cancer patients' interviews, two said they were in severe pain, one said they were in moderate pain, and two said they were in mild pain. The patient had been in severe pain prior to the procedure, moderate pain in the first round of chemotherapy, and mild pain after. In regards of the patient's interventions to eliminate or reduce pain, this included consulting a doctor and being given painkillers, small exercise, and being asked to wait until the pain goes away by itself. The results of interviews with 5 cancer patients, one of whom had already can use a diffuser to inhale lavender aromatherapy, while the other four had never done so. Due to previous studies, the purpose of this is to see how a combination of classical music therapy and lavender aromatherapy affects on pain levels in cancer patients.

METHODS

Quantitative research was used, with a one-group pre-post test design and a quasi-experimental study. Cancer patients at the Samarinda City Cancer Shelter were the subjects of this study. The respondents were selected using a sequential sampling procedure, with a total of 11 persons. All participants received a 20-minute mix of classical music therapy and lavender aromatherapy, with a 30-minute interval in pre-test and post-test. Approval was given from the Institutional Review Boards (IRBs) of the Faculty of Medicine Mulawarman University (Reference No: 23/KEPK-FK/III). The patient was given an observation sheet before and after the intervention to

determine the pain rating using the Numeric Rating Scale (NRS). The researchers used a parametric test, the paired t-test, after performing a normality test before and after giving a combination of classical music therapy and lavender aromatherapy.

RESULTS

Table I: Frequency Distribution by Age, Gender and Type of Cancer (n=11)

| Characteristics | Frequency | Presentase (%) |
|---------------------------------|-----------|----------------|
| Age | | |
| early elderly (46-55 years old) | 7 | 63.6 |
| late elderly (56-65 years old) | 4 | 36.4 |
| Total | 11 | 100 |
| Gender | | |
| Man | 6 | 54.5 |
| Woman | 5 | 45.5 |
| Total | 11 | 100 |
| type of cancer | | |
| Cerebri | 1 | 9.1 |
| Mamae | 2 | 18.2 |
| Rectum | 8 | 72.7 |
| Total | 11 | 100 |

Table 1 showed the respondent characteristic, it reported that age shows the highest number of respondents aged 46-55 years 63.6%, male is the highest with the number of respondents (54.5%), types of cancer showed that the largest number of respondents in rectal cancer as many as 8 (72.7%).

Based on table II showed that of the 11 respondents, the pain scale obtained before the intervention using the Numeric Rating Scale averaged 6.55 (moderate to severe pain), the lowest pain scale was 5 (moderate pain) and the highest pain scale was 8 (severe pain). Furthermore, the pain scale obtained after the intervention using the Numeric Rating Scale averaged 4.82 (moderate pain), the lowest pain scale was 3 (mild pain) and the highest pain scale was 6 (moderate pain).

Table II: Univariate analysis of pain scale of cancer patients before and after the intervention of classical music therapy and lavender aromatherapy (n=11)

| Variable | Mean | Median | Min-max | SD | 95%CI |
|-------------------------------|------|--------|---------|-------|-----------|
| NRS scale before intervention | 6.55 | 7.00 | 5-8 | 1.036 | 5.85-7.24 |
| NRS scale after intervention | 4.82 | 5.00 | 3-6 | 0,982 | 4.16-5.84 |

Table III: The results of the difference in the average pain before and after being given classical music therapy intervention and lavender aromatherapy in cancer patients (n = 11)

| Variable | Mean | Sig. (2-tailed) |
|--|-------|-----------------|
| Pain before intervention - pain after intervention | 1.727 | .000 |

Paired t-test was conducted in this study with 11 respondents with significant results 0.000 (p value <0.05) where the difference in pain experienced by cancer patients before and after giving classical music therapy intervention and lavender

aromatherapy was 1.727, CI 95% 1,413 to 2,041. Because the $p < 0.05$ and the CI did not pass zero, statistically there was a significant change in the mean pain scale before and after the intervention of a combination of classical music therapy and lavender aromatherapy was given.

DISCUSSION

Pain is caused by the sympathetic nervous system being stimulated, which causes an increase in blood pressure, heart rate, and respiratory rate, as well as restlessness, insomnia, nutritional issues, and a delay in recovery. Pharmacological and nonpharmacological methods, including complementary therapies, can be used to relieve pain. A variety of medications are used to treat pain. However, they have limitations and drawbacks, such as lidocaine spray, which can cause allergic reactions, systemic absorption, and potential cardiac dysrhythmia. Non-pharmacological methods, on the other hand, are low risk, feasible, and accessible, as well as providing a cost-benefit to the nursing field. Distraction, body relaxation, music therapy, and aromatherapy are just a few examples of complementary therapies (29-30).

Pain before the intervention of a combination of classical music therapy and lavender aromatherapy

Based on the results of the pre-test before classical music therapy and lavender aromatherapy were carried out on pain in cancer patients, it was known that patients with pain on a scale of 8 were 2 respondents with the characteristics of the pain they felt, namely pain in the lower abdomen and like stabbing, the pain felt strong enough to disturb activity, on a scale of 7 as many as 4 respondents felt pain, namely in the lower abdomen, on a scale of 6 as many as 3 respondents felt pain in the breast and lower abdomen, and the lowest pain before being given an intervention on a scale of 5 with a total of 2 respondents felt pain on the head and does not interfere with activities. The pain felt by respondents usually occurs at night.

According to the findings of this current study, the average pain scale of cancer patients before a combination of classical music therapy and lavender aromatherapy was 6.55. Based on previous research, the average pain scales before treatment on days one, two, and three were 5.08, 4.36, and 3.84, respectively (moderate pain) (31). While the research conducted by Triana at Sanglah Hospital explained that the average pain level of cancer patients before giving lavender aromatherapy inhalation was 5.47 (moderate pain). However, moderate pain occurs in ALL cancer (Acute Lymphoblastic Leukemia), so it is known that the pain scale of cancer patients is also determined by the type of cancer experienced by the patient (32).

Pain After the intervention of a combination of classical music therapy and lavender aromatherapy

Pain experienced after the intervention of a combination of classical music therapy and lavender aromatherapy respondents who felt pain reduction on a scale of 6 amounted to 3 respondents, a scale of 5 amounted to 4 respondents, a scale of 4 amounted to 3 respondents and a scale of 3 amounted to 1 respondent. From the results of repeated measurements after being given the intervention, the pain was reduced. At the time of the intervention, it was carried out in 1 patient for approximately 15 minutes. The results showed that the pain has slightly reduced. In table II, the average value of the pain scale of cancer patients after a combination of classical

music therapy and lavender aromatherapy is done is 4.82. Previous study explained that the average pain scale after being given treatment on day 1, day 2, day 3 were 3.44, 3.20, 2.56 (mild pain) (31). This study is in line with what Triana at Sanglah Hospital explained that the average pain level of cancer patients after giving inhalation of lavender aromatherapy was 2.70 (mild pain) (32).

The effect of the intervention of a combination of classical music therapy and lavender aromatherapy

The results in the study that the researchers conducted on 11 respondents who experienced pain with classical music therapy and lavender aromatherapy given once with a duration of approximately 20 minutes showed a significant difference before and after the intervention. Although there is still pain after classical music therapy and lavender aromatherapy, the difference in the average pain intensity can be seen through the results of the statistical analysis that has been done.

According to the results of the paired t-test, it showed that the results of the intervention of a combination of classical music therapy and lavender aromatherapy have a p value < (0.05) which is 0.000, so there is a significant difference in the mean before and after the intervention of a combination of classical music therapy and aromatherapy lavender. This means that the intervention given can reduce pain in cancer patients.

Sedative music does not only have a distraction effect in inhibiting pain perception. Music is believed to increase the release of endorphins (33). Endorphins are ejectors of the sense of relaxation and calm that arise, the midbrain secretes Gamma Amino Butyric Acid (GABA) which functions to inhibit the conduction of electrical impulses from one neuron to another by neurotransmitters in the synapse. The midbrain secretes enkepalins and beta endorphins and these substances can cause an analgesic effect which ultimately eliminates pain neurotransmitters in the somatic sensory perception and interpretation center in the brain so that the effect that can appear is reduced pain (34).

In line with previous studies found an effect of giving lavender aromatherapy has an effect on reducing cancer pain levels (31-32), and music therapy can be considered a nonpharmacological method of reducing cancer pain (35). Complementary therapies, such as aromatherapy, are becoming more popular in palliative care and cancer treatment units. Aromatherapy is thought to alleviate pain, anxiety, and depression while also improving overall well-being. These characteristics, in addition to low cost and ease of use, make and reduce the use of pain medications (36).

CONCLUSION

The results of statistical analysis tests using paired t-test showed changes in pain scale before and after the intervention of a combination of classical music therapy and lavender aromatherapy with a significant value of 0.000 (p value <0.05). It can be concluded that the combination of classical music therapy and lavender aromatherapy has an effect on reducing pain levels in cancer patients.

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