



Effect of Musical Therapy Laggam Jawa on Pre-chemotherapy Anxiety of Cancer Patients

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Abstract

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BACKGROUND: Anxiety occurs in cancer patients who are undergoing chemotherapy for the 1st time. Excessive anxiety which occurred in the pre-chemotherapy phase can contribute to the failure of chemotherapy programs. One of attempts to reduce anxiety is providing musical therapy Laggam Jawa.

AIM: The purpose of the research is to identify the effect of musical therapy Laggam Jawa to pre-chemotherapy anxiety score.

METHODS: The research used quasi-experimental design which involved pre-posttest with control group. The research was conducted at a hospital in Central Java. The population was cancer patients who undergoing chemotherapy for the 1st time and experienced pre-chemotherapy anxiety. Samples were selected with purposive sampling technique that met inclusion criteria. Subjects were 42 respondents consisting of 21 in each group obtained by simple random sampling technique. Health education and deep breathing exercise were provided to the control group, while the treatment group obtained health education, deep breathing exercise, and musical therapy Laggam Jawa. The measurement of pre-chemotherapy anxiety in the cancer patients was using State-Trait Anxiety Inventory. An independent t-test performed the analysis.

RESULTS: The results showed that pre-chemotherapy anxiety score decreases significantly in those two groups (p-value: 0.001; α : 0.05). The treatment group showed a higher decrease of pre-chemotherapy anxiety than the control group.

CONCLUSION: The finding highlights musical therapy Laggam Jawa is effective to reduce pre-chemotherapy anxiety of cancer patients. It is recommended to apply musical therapy Laggam Jawa for cancer patients who're undergoing chemotherapy.

Introduction

Cancer disease is a major public health problem worldwide and the second leading cause of death globally, and is responsible for about 10 million deaths per year. Globally, about one in six deaths is due to cancer. Approximately 70% of deaths from cancer occur in low- and middle-income countries such as Indonesia (Cancer and Organization, 2020; Ferlay, 2020). Cancer is a group of disease characterized by the uncontrolled cell proliferation [1], [2], [3]. Cancer is one of the chronic diseases that receive primarily focused from the country besides four other chronic diseases such as stroke, diabetes mellitus, and chronic obstructive pulmonary disease. In Indonesia, the prevalence of cancer in 2018 reached 1.79 in 1000 population, an increase from 2013 which was 1.4 in 1000 population. In Indonesia as much as 136.2 in 100,000 population [1]. Indonesia is the 8th country with the most cases in Southeast Asia and 23rd in Asia [4], [5].

One of the cancer treatments is chemotherapy. Chemotherapy treatments are used to inhibit vigorously growing malignant cells with anticancer agents [6]. Chemotherapy has physical and psychological side effects in cancer patients. The common physical side effects observed during the period of chemotherapy treatment are nausea, vomiting, hair loss (alopecia), mucositis (inflammation of the lining of the digestive tract), dermatitis, fatigue, dry skin, the skin can turn black, no appetite, and sore bones, and myelosuppression (decreased production of blood cells, hence also immunosuppression) [6], [7]. Patients will experience fear or anxiety about the actions and side effects of the chemotherapy [8].

Cancer patients who are undergoing chemotherapy for the 1st time often overestimate the danger and underestimate their ability so that they experience pre-chemotherapy anxiety. Anxiety that occurs continuously and is not resolved immediately can lead to panic attacks. A panic attack is a rapid, intense, and escalating episode of anxiety lasting

15–30 min. The individual experiences great emotional fear and physiological discomfort [9]. Anxiety can cause stimulation of the cerebral cortex which, in turn, can stimulate the vomiting center, allowing for an increase in complaints of nausea and vomiting due to chemotherapy. Treatment to prevent and handle anxiety in pre-chemotherapy period is very important to make the patient feel comfort and ready for the chemotherapy [10].

One of the therapies to reduce pre-chemotherapy anxiety is musical therapy. Musical therapy has been used in nursing environments as a strategy to reduce anxiety, increasing rest, and sleep in patients [11], [12]. The previous study showed that musical therapy Langgam Jawa reduces anxiety in patients pre-operative [13]. Traditional music is one of the relaxation music because it can improve physical and physiological functions [14]. The other research on traditional music showed that Turkish music was effective in reducing diastolic blood pressure and increases comfort of patients [15].

A preliminary study conducted at a Hospital in Central Java, through survey on five pre-chemotherapy patients by giving the State-Trait Anxiety Inventory (STAI) questionnaire. It was found that all patients had anxiety. Three patients said that they are worried about the chemotherapy process for the 1st time and the side effects. An interview was conducted with the nurse. The nurse stated that they provide health education regarding chemotherapy and giving deep breathing exercise to patients before receiving first chemotherapy based on the standard operational procedure in the hospital. However, some of the patients still have anxiety although already receive health education and deep breathing exercises.

The purpose of this study was to determine the effect of musical therapy Langgam Jawa on pre-chemotherapy anxiety of cancer patients.

Ethics approval

This research has ethical clearance by the Committee of Ethics of Moewardi Hospital Surakarta with ID number 832/VII/HERC/2020. Respondents were voluntary, and the respondents had the right to withdraw at any time without further explanation. Data were stored securely and anonymously in compliance with the data protection act.

Materials and Methods

The study applied a quasi-experimental design which involved pre-posttest with a control group. The

study was conducted at a Hospital in Central Java. The health education regarding chemotherapy and deep breathing exercise was applied to control group, while the treatment group obtained health education about chemotherapy, deep breathing exercise, and musical therapy Langgam Jawa.

The population was cancer patients who undergoing chemotherapy for the 1st time and experienced pre-chemotherapy anxiety at a Hospital in Central Java. The samples were 42 respondents (the cancer patients) who were willing to participate and had pre-chemotherapy anxiety (screening score of anxiety with STAI). Samples were selected with purposive sampling technique that met inclusion criteria. The inclusion criteria were cancer patients who're undergoing chemotherapy for the 1st time and experienced pre-chemotherapy anxiety; patients who understand Javanese language and have preferences in music Langgam Jawa; and patients who were voluntary become research respondents. Respondents who had consuming anxiety drugs, experienced hearing loss, and experienced loss of consciousness were excluded from the study. Samples were 42 respondents consisting of 21 in each group obtained by simple random sampling technique. The research variable was musical therapy Langgam Jawa as independent variables and pre-chemotherapy anxiety as dependent variable.

The measurement of pre-chemotherapy anxiety of the cancer patients was using STAI. STAI was created by Spielberger in 1980 and translated by the researchers. STAI questionnaire consists of 20 items with response options based on a self-reported Likert scale where each item is given a score of 1–4. On the A-State indicator (anxious state) with a positive statement, it is stated with a score of 1 = not at all, 2 = somewhat, 3 = moderately so, and 4 = very much so. The state anxiety score ranges from a minimum of 20 to a maximum of 80. A low score indicates no or little anxiety while a higher score indicates a higher level of anxiety. STAI questionnaire grid is A-State: Favorable (1, 2, 5, 8, 10, 11, 15, 16, 19, and 20) while unfavorable (3, 4, 6, 7, 9, 12, 13, 14, 17, and 18) [16]. STAI has a validity test result value of 0.390–0.736 which means it is valid and a Cronbach's alpha value of 0.960 which means it is reliable [17].

The respondents in the intervention and control groups completed STAI questioner before both groups were given treatment. The treatment group received health education, deep breathing exercise, and musical therapy Langgam Jawa. In contrast, the control group received health education and deep breathing exercise only. The treatment group received a 15 min musical therapy Langgam Jawa. A 15 min after a complete musical therapy session, the nurse reassessed pre-chemotherapy anxiety scores in both the control and intervention groups.

The title of Langgam Jawa music in the research is Luntur-Langgam Jawa by Gesang. The duration of the song is about 4:51 s. The song was played repeatedly in duration 15 min. The pre-posttest of pre-chemotherapy anxiety using STAI was performed to the respondents.

The analysis used univariate and bivariate analysis with a statistic test of a paired t-test and independent t-test. The researcher performed the statistical data analysis with SPSS.

Results

The study showed that the majority of the respondents in both the treatment and control groups were women (61.9% in the treatment group and 52.4% in the control group) (Table 1).

Table 1: Characteristics of cancer patients undergoing chemotherapy, August 2020 (n = 42)

Characteristics	Treatment group		Control group	
	n	%	n	%
Gender				
Men	8	38.1	10	47.6
Women	13	61.9	11	52.4

The study found that cancer patients in the treatment group who received musical therapy Langgam Jawa had a mean score of pre-chemotherapy decrease from 60.1 to 35.52, while in the control group who received health education and deep breathing exercise also showed a decrease from 60.5 to 51.81. The dependent t-test shows a $p=0.001$ ($p < 0.05$) which means that there is significant difference between pre-chemotherapy anxiety of cancer patients before and after receiving interventions both in the treatment and control groups (Table 2).

Table 2: Pre-chemotherapy anxiety of cancer patients in the treatment group and control group, August 2020 (n=42)

Variable	Group	n	Mean pre-test	Mean post-test	Mean diff.	SD	p-value
Pre-chemotherapy anxiety	Treatment group	21	60.1	35.52	24.58	6.97-7.64	0.001
	Control group	21	60.5	51.81	8.69	6.71-6.96	0.001

The study identified that mean score of pre-chemotherapy anxiety of cancer patients in the treatment group had greater decrease than the control group. The independent t-test shows $p = 0.001$ ($p < 0.05$) which means that there is a significant difference between pre-chemotherapy anxiety of cancer patients in the treatment and control groups (Table 3).

Table 3: Pre-chemotherapy anxiety of cancer patients post-test in the treatment group and control group, August 2020 (n = 42)

Variable	Group	n	Mean	SD	Mean diff.	p-value
Pre-chemotherapy anxiety	Treatment group	21	35.52	7.64	16.29	0.001
	Control group	21	51.81	6.96		

Discussion

The majority of the respondents were women both in the control and treatment groups. The greater incidence of anxiety in women is not exclusive of oncology. These findings coincide with other study which identified greater pre-chemotherapy anxiety in women compared to men [18]. Women have 60% more probabilities of developing an anxiety throughout their life [19]. Women show more biological anxiety and stress reactivity than men. Anxiety in men is more likely to have a lower risk of experiencing anxiety because men are more active and explorative than women [18], [20].

Anxiety is one of the most common problems experienced by patients receiving their first chemotherapy treatment [21]. Anxiety is caused by fear of treatment that has never been obtained so that it puts forward fear and anxiety about the effects of changes that occur on them. This is in line with the theory that in patients who are undergoing chemotherapy for the 1st time, patients often overestimate the danger and underestimate their ability. Patients will experience fear or anxiety about the actions and side effects of the chemotherapy [8].

Pre-chemotherapy anxiety in cancer patients decreased significantly both in the control and treatment groups ($p < 0.05$). In the control group, the health education regarding the chemotherapy and deep breathing exercise was applied as basic intervention. The health education and deep breathing exercise can reduce pre-chemotherapy anxiety in the control group with mean score decreased from 60.5 to 51.81. This finding is consistent with the previous study. Information regarding side effects of treatment, side effect management strategies, and orientation to the infusion center are the most important topics of education that reduce anxiety. In addition, education performed by nurses before the first chemotherapy infusion in a quiet environment is most effective [21]. Another study explained that health education using brochure media is an effective strategy to increase knowledge [22]. The level of knowledge is associated with the psychological problems such as anxiety [10].

Besides that, the patient in the control group not only received health education but also deep breathing exercise. National Safety Council explains that relaxation techniques are effective treatment for managing anxiety [12]. Deep breathing exercise is proven to decrease anxiety [23]. The other study explains that deep breathing exercise is the effective treatment for individuals who experience anxiety (Harris, 2020) [24]. Deep breathing can physiologically cause relaxing effects involving the parasympathetic nerves in the central nervous system. The function of one of the parasympathetic nerves is to reduce the production of adrenal hormone or epinephrine (stress

hormone) and increase the secretion of non-adrenaline or non-epinephrine hormones (relax hormone) so that anxiety and tension decrease so that they become more relaxed [25].

The research shows that in the treatment group, decrease in pre-chemotherapy anxiety indicates greater decrease than the control group after the intervention is applied. The health education, deep breathing exercise, and musical therapy Langgam Jawa are applied in the treatment group. The interventions reduce pre-chemotherapy anxiety with mean score decrease from 60.1 to 35.52. The additional intervention that is musical therapy Langgam Jawa performed great effect in reducing anxiety. Music listening had a consistently positive and statistically significant effect on reducing psychological parameters of pre-procedural state anxiety [26]. Listening to music reduces anxiety in patients undergoing the medical procedure, provided that the music complies with the patient's preferences [27]. In this study, one of the inclusion criteria is understanding Javanese language and has preferences in music Langgam Jawa. These criteria represent the respondents' musical preferences that support in reducing pre-chemotherapy anxiety.

The music Langgam Jawa has been influenced by that local music or local ethnic, both from its interpretation and of its instrument playing, and therefore resulted the style of new Keroncong music (Siswanto *et al.*, 2004; Larasati, 2014). The previous study showed that musical therapy Langgam Jawa reduces anxiety in patients pre-operative [13]. The characteristic of Langgam Jawa used in the study was Keroncong with Gesang as the singer. Music Langgam Jawa is familiar and increasingly preferred in the elderly in Central Java. Javanese traditional music can reduce anxiety of the elderly [24]. Traditional music is one of the relaxation music coincide in a research conducted by Shimizu *et al.* (2013) showing that traditional Japanese music improves physical and physiological functions [14]. The other research on traditional music showed that Turkish music was effective in reducing diastolic blood pressure [15].

Musical therapy Langgam Jawa can synchronize the body's rhythm by means of vibration and stimulate a person to feel calm, suppress the release of cortisol or stress hormones so that gradually the formation of immunity is not disturbed by increasing endogenous opiates (endorphins and encephalins) and reducing catecholamines so that body resistance sufferer increases. Patients can feel comfortable when hearing soft music. Soft music can slow down the heart rate, expand the work of breathing, and finally soothe the soul. The melody and genre of the music stimulate the body to produce serotonin and endorphin and giving relaxation effect to the body. Music elicits responses promoting positive emotions, alleviation of stress, and immune function [28], [29], [30].

Conclusion

The research concludes that health education, deep breathing exercise, and musical therapy Langgam Jawa lead to a significantly decrease in the pre-chemotherapy anxiety of cancer patients. The research has identified that musical therapy Langgam Jawa leads to greater decrease of pre-chemotherapy anxiety than given health education and deep breathing exercise only. The research recommends that musical therapy Langgam Jawa is an alternative intervention at a hospital that reduces pre-chemotherapy anxiety. Future research should use a larger sample and compare the musical therapy Langgam Jawa with the other genre of music.

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