

Research Article

The Effect of Indonesian Traditional Music on Stress in Type II Diabetes Mellitus Patients

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Abstract. Diabetes mellitus is a metabolic disorder characterized by an increase in blood glucose levels. Changes in blood glucose levels in type II diabetes mellitus patients can be influenced by many factors, one of which is changes in stress level. Patients with diabetes mellitus type II need not only pharmacology treatments but also non-pharmacology treatments and complementary therapy to reduce their stress. Music therapy is one type of complementary therapy. The purpose of this study was to examine the effect of saluang, which is a form of Indonesian traditional music, on reducing the stress of type II diabetes mellitus patients. The design of this study was quasi-experimental one-group pretest-posttest. There were 20 participants, who were all diagnosed as type II diabetes mellitus patients. Data were collected using the Depression Anxiety Stress Scale (DASS). Data were analyzed using paired sample t-tests. The average stress level of the type II diabetes mellitus patients obtained before receiving saluang music therapy was 22.5 (SD 5.0), and after receiving saluang music therapy the value was 14.5 (SD 2.3); this difference was significant ($p < 0.01$). Therefore, we can conclude that Indonesian traditional music can be used as therapy to reduce the patient stress level. So, it is recommended that saluang be used as a complementary therapy for type II diabetes mellitus patients.

Keywords: Indonesian traditional music, saluang, stress, type II diabetes mellitus

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1. Introduction

Diabetes mellitus is a chronic progressive disease that is not contagious and requires continuous care. WHO defines diabetes as a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot use the insulin that is available effectively. [1]. Diabetes mellitus is a metabolic disease with characteristics of hyperglycemia, where hyperglycemia is a condition where the level of glucose in the blood exceeds the normal limit [2]. If not treated comprehensively, this disease can continue with complications or other organ damage [3].

The prevalence of diabetes mellitus in the world continues to increase from year to year and is predicted to continue to increase. In 2018, it was reported that there were around 400 million people with diabetes mellitus worldwide [4]. The incidence

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of diabetes mellitus in Indonesia has also increased from year to year. Health research data reports show that the prevalence of diabetes mellitus at the age of 15 years and over was 6.9% in 2013 and increased to 10.9% in 2018. Similar to the prevalence in Indonesia, the prevalence of diabetes mellitus in West Sumatera also experienced an increase in 2018 compared to 2013 which was 1.6% in 2018 and 1.3% in 2013 [5].

Type 2 diabetes mellitus is the type of diabetes mellitus with the highest prevalence. The incidence of type 2 diabetes mellitus reaches 90-95% of the population with diabetes mellitus in the world [6]. Globally, about 425 million people are estimated to suffer from type 2 diabetes mellitus. In Indonesia, in 2017 there were 10.3 million people with type 2 diabetes mellitus in the age group 20-79 years [7]. The West Sumatera Provincial Health Office reported that the number of cases of type 2 diabetes mellitus in West Sumatera in 2018 was 44,280 cases and the highest number of cases was in Padang City with 12,231 cases[8].

Type 2 diabetes mellitus is a type of diabetes mellitus that occurs due to a decrease in sensitivity to insulin which is called insulin resistance or due to a decrease in the amount of insulin production. Type 2 is more common in adults although it can occur in all age groups [2]. Type 2 diabetes mellitus is usually diagnosed after the age of 40 and is more common in older adults, obese adults, and certain ethnic and racial populations. [9]. Changes that occur in patients with type 2 diabetes mellitus are not only changes in physical condition, but are also followed by changes or problems in other aspects. Other problems that can occur in patients with type 2 diabetes mellitus are disorders of psychological well-being, social and spiritual well-being [10]. Psychological well-being that often occurs in patients with type 2 diabetes mellitus is stress.

Several studies report that many patients with type 2 diabetes mellitus experience stress. The results of the study reported that most patients with type 2 diabetes mellitus experienced moderate stress [11–13]. Another study also found that half of patients with type 2 diabetes mellitus experienced moderate stress [14, 15]. Stress that occurs in type 2 DM patients will cause advanced conditions or complications. Research proves that there is a relationship between stress and the healing process of diabetic ulcers [11].

One thing that really needs to be considered in self-management in patients with type 2 diabetes mellitus is handling to overcome psychological problems [16]. Holistic nursing encourages the use of alternative and complementary therapies to improve services for patients [17]. Complementary therapies are proven to be able to overcome various physical and psychological complaints in patients. One type of complementary therapy that is often used to treat psychological problems is music therapy. Music has been used as therapy for a long time and continues to be developed. Music has long

been believed to be a tool for ancient healing rituals and health therapies [18]. Music therapy has been proven to be able to overcome several complaints in patients with certain diseases. Music has been known as a source of healing for the healing process and the treatment of physical and psychological problems. Music also provides support for patients with chronic illness which can encourage positive emotions and promote physical and mental health [19].

Music can treat pain, anxiety and other psychological problems [20]. Music therapy has a role in overcoming patients with depression problems [21]. Music has also been shown to improve sleep quality in acute and chronic disease patients who have sleep disorders [22]. Music therapy has an influence on pain reduction in palliative patients, especially cancer palliatives [23]. Music therapy has also shown effective results for lowering blood pressure in hypertensive patients [24]. The application of classical music therapy (Mozart) has an effect on reducing systolic blood pressure in the elderly with hypertension [25].

Traditional music is one type of music that can be used as therapy. Several studies have proven the effects of traditional Indonesian music on health problems. Keroncong music therapy has been shown to be effective in reducing rheumatoid arthritis pain [26]. Hariring kabayan music instrument, which is one type of traditional Indonesian music, has been proven to be effective in reducing pain in patients with AMI [27]. Sundanese harp music can significantly reduce the anxiety level of Pre-Cardiac Chatheterization patients [28]. Sundanese harp flute music is proven to reduce blood pressure in the elderly [29]. Giving classical Javanese klenengan gending instrumental music is proven to be effective in reducing blood pressure in hypertensive patients [30]. Gamelan music therapy can reduce pain levels in post-orif patients (Wahyuningsih, Warongan, & Rayasari, 2020). Javanese gamelan music has also been shown to reduce depression levels in chronic kidney failure patients undergoing hemodialysis [32]. Other studies have also proven that gamelan music therapy can reduce the pain intensity of patients in the ICU [33].

Saluang music is a type of traditional Indonesian music originating from West Sumatra Province. Saluang is music instruments that made of bamboo which produces music with a wide and dynamic range of tones. If saluang is blown without singing it is usually intended for the treatment of one's illness and spirituality. There are no studies that assess and prove the effects of saluang music on health problems. In this study, researchers have tested the effect of giving traditional Indonesian music : saluang to the stress of type 2 diabetes mellitus patients.

2. Methods

2.1. Design

This type of research is a quasi-experimental one group pre and post test design by giving treatment in the form of giving traditional Indonesian music, namely saluang music.

2.2. Sample

The sample in this study was 20 patients with type 2 diabetes mellitus who met the criteria aged 20 years and over, diagnosed with type II diabetes mellitus for at least 1 year, had never been exposed to music therapy before, had a maximum of three complications, controlled menus and meal portions. The purposed sampling technique was used in taking samples in this study.

2.3. Intervention

The intervention given to the patient was saluang music using headphones for 20 minutes every day. The intervention was carried out for 7 consecutive days. Patients are welcome to choose the time of administration. During administration the patient is advised to choose a comfortable position so that the patient is more relaxed. The volume of music is adjusted to the wishes of each respondent. The intervention was carried out at the home of each respondent.

2.4. Instrument for Data Collection

The instruments used in this study were the depression anxiety stress scale (DASS) to assess the patient's stress score and an observation sheet for blood glucose levels.

2.5. Research Ethics

Prior to the intervention and data collection, each respondent was given informed consent which provided information about the objectives, benefits and procedures of the study.

TABLE 1: Characteristics of Type 2 Diabetes Mellitus Patients (n=20)

Characteristics	Mean (SD)	f	%
Age	57.3 (7.5)		
Gender			
Male		1	5.0
Female		19	95.0

2.6. Data Analysis

Data processing and analysis was carried out using SPSS. The results of the study were processed by paired sample t-test.

3. Result

Based on the research results shown in table 1, it can be seen that the average age of type II diabetes mellitus patients in this study was 57.3 years and most of the patients (95%) were female.

Based on tables 2 and 3, it can be seen that there is a change in the percentage of answer choices for each patient's statement before and after listening to traditional Indonesian music: saluang.

Based on table 4, it can be seen that before being given saluang music, the average stress score for type II diabetes mellitus patients was 22.5 with a standard deviation of 5.0 while after being given music therapy the average stress score was 14.5 with a standard deviation of 2.3.

The results of paired sample t-test in table 5 show that the difference in the average stress score of patients before and after being given saluang music therapy is 8.0. This statistical test also obtained a p-value for the stress score, which was 0.00 (p-value <0.05), which means that there was a difference in stress scores before and after being given traditional Indonesian music: saluang. The results of this study prove that the provision of Indonesian traditional music: saluang can affect the stress of type II diabetes mellitus patients, where the stress score of type 2 diabetes mellitus patients tends to decrease after being given traditional Indonesian music therapy: saluang.

4. Discussion

This study which aims to determine the effect of giving traditional Indonesian music in the form of saluang music originating from West Sumatra shows that listening to saluang

TABLE 2: The Results of Stress Assessment Items based on DASS Instruments in Type 2 Diabetes Mellitus Patients Before Giving Indonesian Traditional Music : Saluang (n = 20)

No	Stress Assessment Items	M	SD	Never		Sometimes		Often		Always	
				f	%	f	%	f	%	f	%
1	I feel myself getting angry over trivial things	2.1	0.5	0	0	1	5	16	80	3	15
2	I tend to overreact to a situation	1.9	0.7	0	0	7	35	9	45	4	20
3	I find it hard to relax	1.7	0.7	0	0	8	40	10	50	2	10
4	I find myself easily irritated	2.3	0.7	0	0	3	15	8	40	9	45
5	I feel like I've spent a lot of energy feeling anxious	1.6	0.6	0	0	10	50	9	45	1	5
6	I find myself getting impatient when experiencing procrastination	1.8	0.8	1	5	6	30	9	45	4	20
7	I feel that I am worthless as a human	0.7	1.0	13	65	3	15	2	10	2	10
8	I feel that I am easily offended	1.5	0.6	0	0	12	60	7	35	1	5
9	I find it hard to rest	1.4	0.6	0	0	14	70	5	25	1	5
10	I feel that I am very irritable	1.6	0.5	0	0	8	40	12	60	0	0
11	I find it hard to be patient in the face of distractions from what I'm doing	1.7	0.7	0	0	8	40	10	50	2	10
12	I'm feeling restless	1.5	0.7	1	5	10	50	8	40	1	5
13	I can't tolerate anything that prevents me from completing what I'm doing	1.1	0.3	0	0	18	90	2	10	0	0
14	I find myself easily agitated	1.9	0.7	0	0	7	35	9	45	4	20

music can reduce stress in patients with type 2 diabetes mellitus. Based on the results of this study, it can be concluded that saluang music therapy can have the effect of reducing the stress score of type 2 diabetes mellitus patients.

The results of this study which prove that the provision of traditional Indonesian music in the form of saluang can affect the stress of patients with type 2 diabetes mellitus is supported by previous research. Several studies have proven the effect of music on a person's emotional and psychological conditions, including in patients with diabetes mellitus. The act of giving music to diabetes mellitus patients has been proven to be effective, beneficial and safe to treat depression and anxiety [34–36]. Meta-analytical

TABLE 3: The Results of Stress Assessment Items based on DASS Instruments in Type 2 Diabetes Mellitus Patients After Giving Indonesian Traditional Music : Saluang (n = 20)

No	Stress Assessment Items	M	SD	Never		Sometimes		Often		Always	
				f	%	f	%	f	%	f	%
1	I feel myself getting angry over trivial things	1.2	0.4	0	0	17	85	3	15	0	0
2	I tend to overreact to a situation	1.3	0.4	0	0	15	75	5	25	0	0
3	I find it hard to relax	1.1	0.2	0	0	19	95	1	5	0	0
4	I find myself easily irritated	1.3	0.4	0	0	15	75	5	25	0	0
5	I feel like I've spent a lot of energy feeling anxious	1.1	0.5	2	10	14	70	4	20	0	0
6	I find myself getting impatient when experiencing procrastination	1.1	0.6	2	10	14	70	4	20	0	0
7	I feel that I am worthless as a human	0.5	0.7	12	60	6	30	2	10	0	0
8	I feel that I am easily offended	1.2	0.4	0	0	17	85	3	15	0	0
9	I find it hard to rest	1.1	0.4	1	5	17	85	2	10	0	0
10	I feel that I am very irritable	1.1	0.4	1	5	17	85	2	10	0	0
11	I find it hard to be patient in the face of distractions from what I'm doing	1.0	0.4	2	10	17	85	1	5	0	0
12	I'm feeling restless	1.0	0.2	1	5	19	95	0	0	0	0
13	I can't tolerate anything that prevents me from completing what I'm doing	1.0	0.0	0	0	20	100	0	0	0	0
14	I find myself easily agitated	1.0	0.6	3	15	14	70	3	15	0	0

research has also proven that music can reduce stress levels in patients [37]. Playing music in the clinic is proven to be able to provide a positive stimulus for patients. Patients feel more relaxed, calm and comfortable [38]. Music therapy is a relaxation technique to improve, maintain, develop mental, physical, and emotional health [39]. Music as universal language can help patients to get out of negative experiences [40].

Music received through the sensory perception system in the form of the ear can affect other systems. Music received by the ear will be delivered to the brain which will affect the hypothalamus and cause changes in limbic and paralimbic activity which are parts that regulate emotional processes and moods. [41–43]. Music that has a slow

TABLE 4: Average Stress Score of Type 2 Diabetes Mellitus Patients Before and After Giving Indonesian Traditional Music : Saluang (n=20)

Stress	N	Mean	SD	Min	Max
Before	20	22.5	5.0	16	35
After	20	14.5	2.3	11	19

TABLE 5: Comparison of Stress Scores in Type 2 Diabetes Mellitus Patients Before and After Giving Indonesian Traditional Music: Saluang (n=20)

Stress	Mean	Mean Difference	SD	SE	T	p-value
Before	22.5	8.0	5.0	1.1	8.0	0.00
After	14.5		2.3	0.5		

rhythm will also inhibit the release of catecholamines into the blood vessels which will be followed by a decrease in the concentration of catecholamines in plasma. This condition will trigger stimulating the sympathetic nerves which in turn will stimulate the release of stress hormones that cause the body to relax [44].

The type of music that has been proven to be effective as therapy is music with low cost criteria, free from side effects and using a cultural approach [45]. The basic emotions conveyed through music tend to be perceived by listeners according to their cultural background [46]. Leininger Transcultural Nursing Theory states that nursing care given to patients must be adapted to the beliefs, culture, values and lifestyle of the patient. In addition, in nursing, cultural sensitivity is very important to be applied in providing nursing care to patients [27].

In transcultural nursing theory, local music is a form of environment in Leininger's theoretical paradigm [47]. One type of music that exists in society that is in accordance with the culture of the community is known as traditional music. Traditional music with a speed of 128 kilo bytes per second (kbps) and 70 decibels (dB) can create a calm and peaceful atmosphere, relax the body and reduce anxiety levels. [29]. Research on traditional music as therapy has proven that traditional music has a positive effect on patients. The Sundanese Cianjuran music intervention proved effective in reducing the anxiety level of hemodialysis patients [48]. Dangdut music therapy can reduce the anxiety of patients with chronic kidney failure in undergoing hemodialysis therapy [49]. Other studies also prove that there is a significant effect of traditional music therapy on reducing depression levels in CKD patients undergoing hemodialysis [50]. The results of all these studies are in line with the research that has been done. Saluang music as one of Indonesia's traditional music has also been proven to help overcome health.

This is evidenced by a change in the stress score of type 2 diabetes mellitus patients after being given saluang music.

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