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EFFECTS OF TRADITIONAL THAI MASSAGE ON HEART RATE, BLOOD PRESSURE, AND ANXIETY IN DEPRESSION PATIENTS: A PILOT STUDY

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ABSTRACT: Major Depressive Disorder has been predicted asthe second leading cause of death and disability by the year 2020. Massage is the most popular complementary and alternative medical treatment for depression. It is likely to effectively reduce anxiety. This study aimed to preliminarily examine the immediate effects of Traditional Thai Massage (TTM) on heart rate, blood pressure, and anxiety on patients with depression. The study was conducted at a district hospital, and 5 Local Health Promoting Hospitals in Khon Kaen province, Thailand. A single group pre-post design was applied. Fifteen patients diagnosed with depression participated in the study. Before and immediately after the intervention, blood pressure, heart rate, and anxiety state (using the state trait anxiety inventory; STAI) were measured. The results demonstrated a significant reduction on heart rate (mean different 5.57±4.80 bpm: p=0.001), and STAI after receiving TTM (mean score different 38.47±5.51: $p < 0.001$). However, no significant difference was found in blood pressure (p=0.12). TTM seems to have some beneficial immediate effects on patients with depression concerning reducing heart rate, and anxiety. A further study using randomized controlled trial with larger sample size and long-term follow-up is suggested to verify the effects.

Keywords: Traditional Thai Massage, Depression, Heart rate, Anxiety

1. INTRODUCTION

Any chronic stressful situations such as encountering natural disaster[1], and environmental issues[2]can lead to both mental and physical stresses of the victims. In the long run, some health problems of these victims may turn in to depression. Depression is a worldwide common mental illness; estimated 350 million people were affected[3], and recognized as a risk factor for coronary artery disease. Some previous studies have found elevated heart rate and lower heart rate variability in patients with depression than non-depression patients[4], [5].Coronary heart diseasehas been found associated with coexisting level of anxiety than depression[6].

Interestingly, the onset of anxiety generally precedes depression, whereas anxiety disorders were strongly related to major depressive disorder (MDD) regardless of the time frame[7].However, a recent study has suggested that the pattern generalized anxiety has usually developed into depression or vice versa[8].

Massage hasshown some evidence of increasing parasympathetic activities, reducing heart rate, andblood pressure in patients with musculoskeletal disorders [9].If massage could reduce heart rate and anxiety state of patients with depression, it would bebeneficial as an alternative therapy. However, no study has yet reported its effect on the patient population with depression regarding the heart rate and anxiety. The purpose of this study was to preliminarily examine the effects of Traditional Thai Massage (TTM) on heart rate, blood pressure, and anxiety level of patients with depression.

2. METHODS

2.1 Design and setting

A single group pre-post experimental design was applied. This was done by having the patients exposedtoa session of 90 minutes TTM. All the outcome measures were assessed before and immediately after the TTM treatment. The study was conducted at TTM room of a district hospital, and 5 Local Health Promoting Hospitals, in Khon Kaen province, Thailand.

2.2 Participants

Fifteen patients, aged 15-59 years, were recruited from the psychiatric clinic at the hospital. All the patients were classified accordingly to the inclusive criteria to participate in the study through Patient

Health Questionnaire Screening by answering the first 2 set of questions (PHQ-2 and PHQ-9), 9-questions were answered. If they fell into the criteria, they were included in the study. Patient Health Questionnaires were verified by clinicians of the hospitals. Patients with any history of the contraindications consisted of either diabetes mellitus, hypertension, multiple sclerosis or heart disease were excluded.

2.3 Intervention

Intervention of Traditional Thai Massage (TTM) The techniqueof TTM used in this study based on a standard whole body Thai massage known as SenSib Nuad Thai. The TTM protocol consisted of the following steps. Initially, having the patients lay on his/her back the massage therapist applied gentle but firm palm pressure on the patient's medial aspect of upper arm aiming to temporally occlude the brachial artery for 20-30 seconds after which releasing the pressure to let blood flow to the arm and hand. This technique was also done for the lower limb using the palm pressure on the femoral artery. This technique is called opening the wind gate which aims to stimulate blood flow to all the tissues of the limbs.Then the therapist applied gentle but deep thumb pressure massage along the ten meridian lines of TTM that covered major muscles of limbs, back, neck, and head consequently. Thumb pressure massage along each of the line was repeated 5 rounds.The amount of thumb pressure on each of the body parts was adjusted by the therapist according to but not exceeds the pressure pain threshold of the patient. At the end of the massage session, the therapist applied gentle stretch for those muscles including calf, hamstring, quadriceps, pectorals, back, neck, shoulder, arm, forearm, and finger muscles.The TTM session covered one and a half hour.

2.4 Procedure

Every session of the study took place at the same time of each day. Each patient arrived at 8.30 a.m. for the STAI interview, heart rate recording and measuring the blood pressure. After that the patient rested in a TTM room for a few minutes, a qualified female massage therapist who, passed the training by the Department of Alternative Medicine, Ministry of Public Health gave a session of 90 minutes of standard TTM procedure while the patient lying on the supine, and prone position. TTM was performed on the patient in the morning. Conversation was minimized during the massage procedure, only few questions were allowed.

The massage session was always ended with stretching. Immediately, after receiving TTM, STAI, heart rate and blood pressure were reassessed.

2.5 Measurement equipment

Blood pressure and heart rate were measured at rest in sitting position using a digital sphygmomanometer (Omron, Japan). A standard STAI (Thai version) was used to evaluate the state trait anxiety.

2.6 Statistical analyses

Shapiro-Wilk test was used to verify the normal distribution of continuous variables. Data were analyzed using STATA Version 10. Demographic data and descriptive statisticswere also applied. Paired t-test and Wilcoxon Sign Rank-Test were used to compare the outcome variables between the pre-and the post-treatment procedure. A difference at the level of $p<0.05$ was considered statistically significant.

3. RESULTS

Demographic data showed that 86.67% of the patients were more than 40 years of age. Three patients (20%) were at the stage of menopause. Most of them had only primary school background. Their incomes ranged from less than 5,000 baht/month (86.67%) to more than 5,000 baht/month (13.33%) (Table 1).

Table 1. Demographic data

Characteristic	n(%)
Age	
20-40	2(13.33)
>40	13(86.67)
(Mean ± S.D.)	48.67±8.63
Menopause	
yes	3(20.00)
No	12(80.00)
Education	
primary	14(93.33)
secondary	1(6.67)
Income	
<5,000 Baht/month	13(86.67)
>5,000 Baht/month	2(13.33)

A Comparison on HR within the group before and after TTM treatment showed that TTM could significantly reduce heart rate (p=0.001)(Fig. 1).

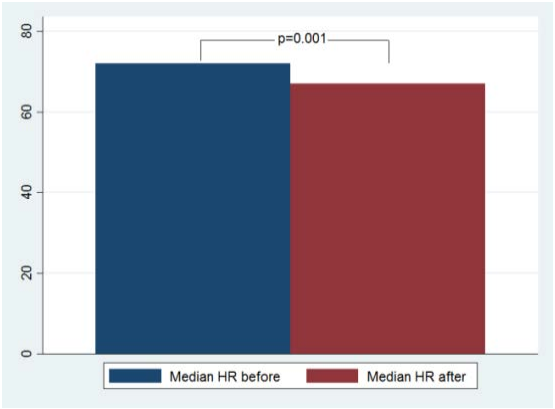

Fig.1 Comparison of resting HR before and after TTM treatment.

There were no significantly changed in either SBP or DBP, however, STAI was significantly increased after the after massage (Table 2).

Table2 Comparison of blood pressure, and STAI within the group before and after TTM treatment.

outcome	TTM group (n = 15)	
	before	after
	Mean±S.D.	Mean±S.D.
Blood pressure		
SBP	123.12±4.35	117.56±3.93
DBP	72.00±2.50	75.16±2.45
STAI	40.20±1.39	48.93±0.84*

Note: SBP=systolic blood pressure, DBP=diastolic blood pressure, STAI=state trait anxiety inventory
*Significant difference at p-value <0.001

4. DISCUSSION

The result of this study has suggested that TTM may have calming effect for this patient population since it had reducedheart rate, and anxiety.The findings of this study are in line with the previous two studies [8], [9]. Although the psychiatric symptoms vary from patient to patient and depend upon the severity and complexity of the disease, the anxiety level of all the patients with depression has been reduced immediately after having TTM. This may be due to feeling of comfort and confident during the massage. These psychological effects are very important for the patients with depressive disorders since they always have feeling of discomfort, agitate, and anxiety as the symptoms of the disease. Although biological mechanism of massage on depression has not been understood, massage has been known as one of the ways to convey love and care to the patients. The massage therapist and the patients are not family member's correlatives; nevertheless, all the patients still could feel the touch and care that any medicine could not provide. Consequently, the heart rate was reduced probably because of relaxation and the increasing of parasympathetic activities of the autonomic nervous system[10]. Both systolic and diastolic blood pressures were not significantly changed after the massage in this study.Thesemay be due to the complex control mechanism of both sympathetic and parasympathetic nervous systems, renal and endocrine systems [11]. In addition, the blood pressures of the patients were within normal limit initially. Therefore, a single session of TTM may not be able to affect them.

The limitation of the study consisted of small sample size since it was a pilot study, and the only immediate effects were investigated. Further study should be conducted on a sufficient sample size and extended to a long-term treatment with follow-up. TTM may be an alternative therapy for this type of patient population. More importantly, the side effect of TTM is relatively minimal.

5. CONCLUSION

Based on the results of this pilot study, we conclude that a single session of TTM may reduce heart rate and anxiety state of patients with depression. We suggest that further research with randomized controlled trial and follow-up study should be applied to verify the effects of Traditional Thai Massage for this patient population.

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