

THE EFFECT OF TRADITIONAL GAMELAN MUSIC THERAPY ON ANXIETY AND DEPRESSION:

**AN OBSERVATIONAL STUDY IN OUTPATIENT POST
STROKE PATIENTS**

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Abstract

The aim of this study was to assess the effect of traditional gamelan music during physiotherapy sessions for stroke patients using the Hospital Anxiety Depression Scale (HADS). This was an observational study involving stroke patients at the Physiotherapy unit at Hospital Kajang, Malaysia in a single session. Inclusion criteria for recruitment included a Modified Ranking Scale (MRS) of 1-4. Patients were exposed to recorded Gamelan music recordings during each of their physiotherapy sessions. The Hospital Anxiety and Depression Scale (HADS) were used to assess patient's satisfaction pre and immediately post session. Difference between the scores were calculated and analysed. A total of 15 post stroke patients (10 males, 15 females) were recruited in this study. The median age was 57 years old. Median MRS Score was 2. A substantial improvement in anxiety and depression was seen during this music therapy session. The mean differences in anxiety and depression score were -2.8 ± 1.2 and -2.2 ± 1.7 respectively. Gamelan music therapy led to a significant reduction in anxiety ($p=0.001$) and depression ($p=0.002$) among patients. In conclusion, there is significant reduction in HAD Score pre and post session after exposure to traditional gamelan music. This showed that our traditional gamelan music has an effect in reducing anxiety and depression among post stroke patients. This method has potential to be integrated in physiotherapy sessions as part of a holistic approach to manage post stroke patients.

Keywords: Gamelan Music, Anxiety, Depression, Music Therapy, Physiotherapy.

Abstrak

Kajian ini bertujuan untuk menilai kesan muzik tradisional gamelan ketika sesi fisioterapi kepada pesakit-pesakit strok menggunakan kaedah HADS. Ini merupakan kajian pengamatan satu sesi melibatkan pesakit-pesakit strok di Unit Fisioterapi, Hospital Kajang, Malaysia. Kriteria yang turut diambil kira adalah MRS 1-4. Para pesakit didedahkan kepada muzik gamelan yang telah dirakamkan pada setiap sesi mereka mendapat rawatan fisioterapi. HADS telah digunakan bagi menilai kepuasan pesakit pra dan sejeurus selepas sesi rawatan. Perbezaan skor dikira dan dianalisis. Sejumlah 15 pesakit pasca strok telah diambil bagi kajian ini. Umur median adalah 57 tahun. Skor MRS median ialah 2. Kemajuan yang ketara atau substantial berkaitan kebimbangan (anxiety) dan depresi dapat dilihat ketika sesi terapi muzik ini. Perbezaan skor antara kebimbangan dengan depresi adalah masing-masing -2.8 ± 1.2 dan -2.2 ± 1.7 . Terapi muzik gamelan menyumbang kepada pengurangan kebimbangan ($p=0.001$) dan depresi ($p=0.002$) dalam kalangan pesakit. Sebagai kesimpulannya, terdapat pengurangan yang ketara dalam skor HADS peringkat pra dan pasca sesi selepas pendedahan kepada muzik tradisional gamelan. Ini menunjukkan bahawa muzik tradisional gamelan kita boleh memberi kesan mengurangi kebimbangan dan depresi dalam kalangan pesakit strok. Kaedah ini mempunyai potensi untuk diintegrasikan dalam sesi fisioterapi sebagai sebahagian daripada pendekatan holistik bagi mengurus para pesakit strok.

Kata Kunci: Muzik Gamelan, Anxiety (kebimbangan), Depresi, Terapi Muzik, Fisioterapi

Introduction

'Music therapy' is defined by the American Music Therapy Association as the 'clinical and evidence-based use of music interventions to accomplish individualised goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program'¹. By listening to music, the brain undergoes a complex process which triggers a sequel of cognitive and emotional components with distinct neural substrates². Hence, it is considered one of the most prevailing sources of auditory stimulation.

Southeast Asia offers a diverse region of rich and ancient cultures, not to mention, its music. Its traditional music reflects different aspects of Asian culture through its timbre, rhythm, melody, texture, form and style. *Gamelan* is the term for a traditional musical ensemble of Java and Bali in Indonesia. This tuned percussion orchestra composed of instruments such as metallophones, which are played by mallets, hand-played drums called kendhang, tuned gongs, bamboo flutes, xylophone and stringed instruments.

Practice of music therapy in healthcare for its healing powers has risen in the past few years. Multiple studies were conducted to evaluate the therapeutic potential of music in relation to stroke. In the first few weeks and months of recovery after an episode of stroke, the brain, enhanced by stimulation provided by the surrounding, can go through dramatic plastic changes. Studies showed an improvement in motor recovery for post-stroke patients who underwent motor and somatosensory environmental enrichment, virtual environments and electrical cortical and peripheral stimulation³.

This single blinded, randomised and controlled study was designed to determine whether traditional Southeast Asia music can facilitate the recovery of cognitive and motor functions following a recent event of stroke. In addition to stimulating both the healthy brain tissues and affected lesions, listening to traditional music would show an increased excitability and adaptability during this subacute recovery phase⁴. This could enhance and expedite the spontaneous recovery process.

- ¹ American Music Therapy Association
² Peretz and Zatorre (2005)
³ T Sarkamo et al(2008)
⁴ Kreisel et al (2006)
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Objective

To determine the effect of traditional gamelan music as an aid to a physiotherapy session for stroke patients using the Hospital Anxiety Depression Scale (HADS).

Hypothesis

Traditional gamelan music is useful in rehabilitation for patients with stroke during a physiotherapy session.

Methodology

This was an observational study on patients at the physiotherapy department at Hospital Kajang, Selangor in one single session. A total of 15 stroke patients (10 males and 5 females) were recruited randomly. The sample size was calculated based on fairly similar study by S. Guetin et al (2009). Inclusion criteria included patients age less than 80 years old and all stroke patients with Modified Ranking Scale (MRS) Score 1-4. Exclusion criteria included Patients with aphasia, MRS score of 5 or more and End Stage Renal Failure (ESRF). Informed consent will be obtained by the principal investigator at the beginning of the study.

During each physiotherapy session, each patient will be exposed to Gamelan music recordings. The Hospital Anxiety and Depression Scale (HADS) questionnaire was used to assess patient's satisfaction pre and immediately post session. To elude examiner's bias, patients had to fill in the questionnaire on their own. If they have difficulties reading, the questions will be read out by close family members. Difference between the scores were then calculated and analyzed.

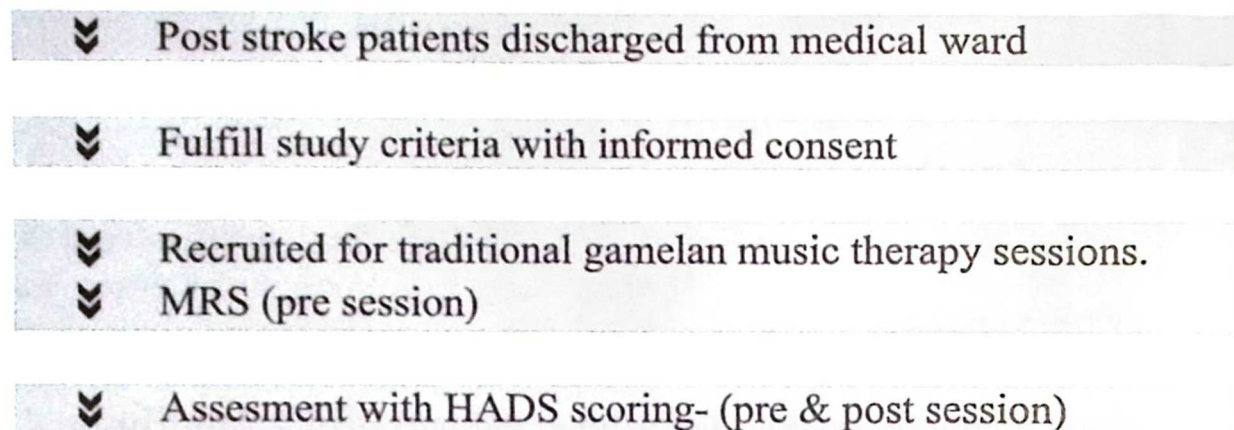


Figure 1 Flow chart of the methodology

Results

Data analyzed using the HADS scoring were compared pre and post exposure to gamelan music in one physiotherapy session. A score out of 21 were calculated for both parts of the questionnaire concerning anxiety and depression respectively. A score of 0-7 were considered as normal, 8-11 showed that patients were moderately affected by stroke and a score of 13-21 indicated severe depression or anxiety.

Both the mean scoring for anxiety and depression showed a significant difference in reduction, with a reduction in anxiety scoring from 13.9 to 11.1 as well as a significant reduction in depression, from 13.8 to 11.6. This shows a decrease in both scoring; -2.8 for anxiety and -2.2 for depression. The analysis is further summarized in Table 1, Figure 2 and 3.

Hence, gamelan music therapy led to a significant reduction in anxiety ($p= 0.001$) and depression ($p=0.002$). A substantial improvement in anxiety and depression was seen during this music therapy session.

	Mean (\pm S.D)
Pre-Anxiety	13.9 (\pm 2.0)
Post-Anxiety	11.1 (\pm 2.1)
Pre-Depression	13.8 (\pm 3.3)
Post-Depression	11.6 (\pm 3.7)
Difference (pre/post) Anxiety	-2.8 (\pm 1.2)
Difference (pre/post) Depression	-2.2 (\pm 1.7)

Table 1

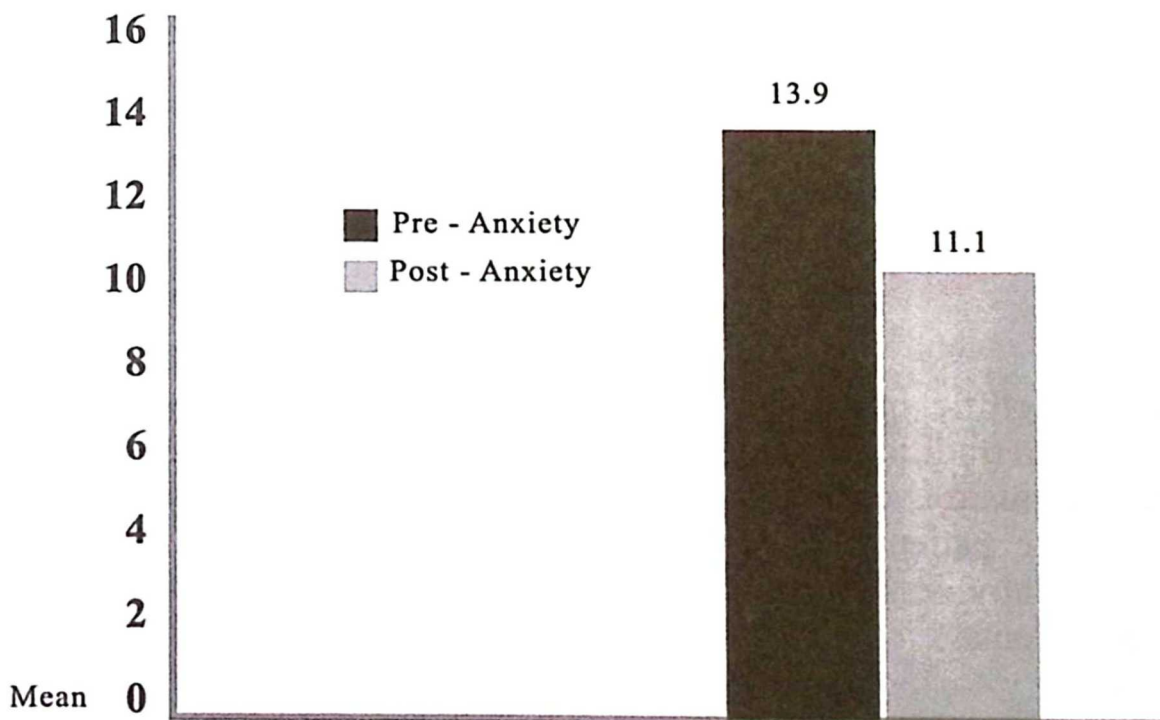


Figure 2

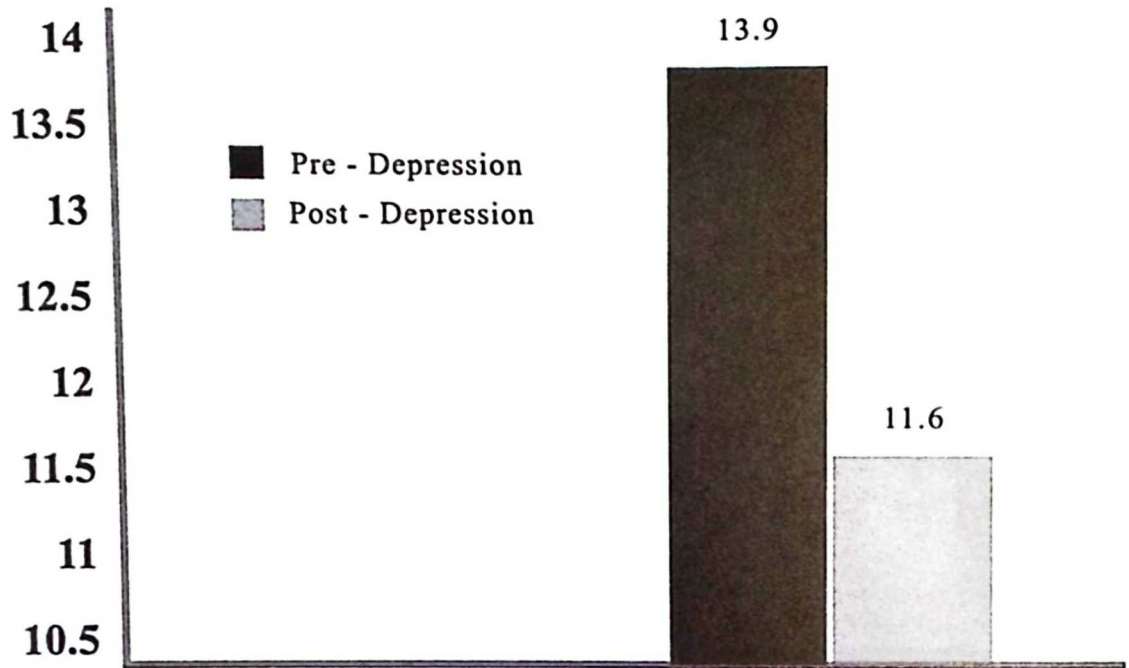


Figure 3

Figure 2 & 3 :
Mean Differences in Anxiety & Depression Score Pre and Post Exposure
to Gamelan Music.

Conclusion

There is significant reduction in HADS score pre and post session after exposure to traditional gamelan music. This showed that our traditional gamelan music is effective in reducing anxiety and depression among post stroke patients. This method has potential to be integrated in physiotherapy sessions as part of a holistic approach to manage post stroke patients.

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Appendix: Definitions

Hospital Anxiety and Depression Scale (HADS)

Reliable and valid instrument for measuring self reported health related quality of life among patients with mild to moderate stroke.

Name: _____

Instructions: Doctors are aware that emotions play an important part in most illnesses. If your doctor knows about these feelings he or she will be able to help you more. This questionnaire is designed to help your doctor know how you feel. Read each item and place a firm tick in the box opposite the reply which comes closest to **how you have been feeling in the past week**. Don't take too long over your replies. Your immediate reaction to each item will probably be more accurate than long thought out response.

1. Feel tense or 'wound up' : Most of the time A lot of the time Time to time, occasionally Not at all		A 3 7 1 0
2. I still enjoy the things I used to enjoy: Definitely as much Not quite so much Only a little Not at all	D 0 1 2 3	
3. I get a sort of frightened feeling like something awful is about to happen: Very definitely and quite badly Yes, but not too badly A little, but it doesn't worry me Not at all		A 3 2 1 0
4. I can laugh and see the funny sides of things: As much as I always could Not quite so much now Definitely not so much now Not at all	D 0 1 2 3	
5. Worrying thoughts go through my mind: A great deal of time A lot of time From time to time but not too often Only occasionally		A 3 2 1 0

6. I feel cheerful: Not at all Not often Sometimes Most of the time	D 0 1 3 2	
7. I can sit at ease and feel relaxed: Definitely Usually Not often Not at all		A 3 2 1 0
8. I feel as if I am slowed down: Nearly all of the time Very often Sometimes Not at all	D 0 1 3 2	
9. I get sort of frightened feeling like 'butterflies in the stomach': Not at all Occasionally Quite often Very often		A 3 2 1 0
10. I have lost interest in my appearance: Definitely I don't take as much care as I should I may not take quite as much care as ever I take just as much care as ever	D 0 1 3 2	
11. I feel restless as if I have to be on the move: Very much indeed Quite a lot Not very much Not at all		A 3 2 1 0

12. I look forward to enjoyment to things:	D	
As much as I ever did	0	
Rather less than I used to	1	
Definitely less than I used to	3	
Hardly at all	2	
13. I get sudden feelings of panic:		A
Very often indeed		3
Quite a lot		2
Not very often		1
Not at all		0
14. I can enjoy a good book or a radio or TV programme:	D	
Often	0	
Sometimes	1	
Not often	3	
Very seldom	2	

Scores 0 - 7 in respective subscales are considered normal with 8 - 10 borderline and 11 and over indicating 'clinical caseness'

Modified Ranking Scale (MRS)

Scale that measures disability or dependence in activities of daily living in

MODIFIED RANKING SCORE

SCORE	DESCRIPTION
0	No symptoms at all
1	No significant disability despite symptoms; able to carry out all usual duties and activities
2	Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance
3	Moderate disability; requiring some help, but able to walk without assistance
4	Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance
5	Severe disability; bedridden, incontinent and requiring constant nursing care and attention
6	Dead