

EFFECT OF MITCHELL'S RELAXATION TECHNIQUE AND MEDITATION IN ESSENTIAL HYPERTENSIVE PATIENTS - A RANDOMIZED CLINICAL TRIAL

EFECTUL TEHNICII DE RELAXARE MITCHELL ȘI A MEDITAȚIEI LA PACIENȚII CU HIPERTENSIUNE ESENȚIALĂ - STUDIU CLINIC RANDOMIZAT

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Key words: Laura Mitchell relaxation therapy, meditation, hypertension, stress

Cuvinte cheie: terapia de relaxare Laura Mitchell, meditație, hipertensiune, stress

Abstract

Introduction and Background. Hypertension is termed as a silent killer because people are often symptom free. It is a common risk factor for cardiovascular and cerebrovascular diseases. Stress is the most significant factor which affects physical and mental health of individual. Mitchell relaxation technique is based on physiological reciprocal relaxation.

Objective. The aim of the study is to find the effect of Mitchell's relaxation technique and meditation on blood pressure in essential hypertensive patients.

Methods. Twenty eight patients with essential hypertension were randomly selected and allocated into two groups. Group A received meditation, and Group B received Mitchell's relaxation training. Both groups were given intervention for 7 days.

Outcome Measure. Systolic and Diastolic Blood Pressure, Pulse rate and Perceived Stress Scale-10(PSS-10).

Results: The results of this study showed that in group B, there was significant reduction in systolic blood pressure ($p=0.002$) and stress level ($p=0.001$) as recorded by perceived stress scale-10. In group A, there was significant difference in systolic ($p=0.01$) whereas there was no diastolic blood pressure ($p=0.83$) and pulse rate ($p=0.238$).

Conclusion: The conclusion of the study is that Mitchell's relaxation is more effective compare to meditation and can be used as an adjunctive treatment along with drug therapy on essential hypertensive patients.

Rezumat

Introducere. Hipertensiunea este considerată ca fiind un ucigaș tăcut, deoarece adesea persoanele nu prezintă simptome. Este un factor de risc frecvent pentru afecțiuni cardiovasculare și cerebrovasculare. Stresul este cel mai important factor ce afectează sănătatea fizică și mentală a individului. Tehnica de relaxare Mitchell se bazează pe relaxarea reciprocă fiziologică.

Obiective. Scopul acestui studiu este de a stabili efectele tehnicii de relaxare Mitchell și a meditației asupra reducerii tensiunii arteriale, la pacienții hipertensivi.

Metode. 28 de pacienți cu hipertensiune esențială au fost selectați aleator și împărțiți în două grupuri. Grupul A a urmat ședințe de meditație iar grupul B a urmat ședințe de relaxare prin metoda Mitchell. Ambele grupuri au urmat tratamentul timp de 7 zile.

Evaluare. Măsurare tensiune arterială sistolică, puls, și rata de percepere a stresului -10 (PSS-10).

Rezultate: Rezultatele studiului au demonstrat că în grupul B există o reducere semnificativă a tensiunii arteriale sistolice ($p=0.002$) și a nivelului de stress ($p=0.001$), înregistrat de scala de percepere a stresului-10. În grupul A, există o diferență semnificativă a tensiunii arteriale sistolice ($p=0.01$) dar nu și a tensiunii diastolice ($p=0.83$) și a pulsului ($p=0.238$).

Concluzii: Tehnica de relaxare Mitchell este mai eficientă comparativ cu meditația și poate fi folosită ca tratament adjuvant alături de terapia medicamentoasă, la pacienții cu tensiune arterială esențială.

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Introduction

'The word Hypertension refers to tension (stretching) in the walls of the arteries'. [1]

Hypertension is often called the 'Silent-Killer' because people with hypertension are symptoms free. [2] Hypertension is the most common risk factor for cardiovascular and cerebrovascular diseases in the developed and developing countries, resulting in heart failure, aneurysms of arteries, myocardial infarction, Stroke and can also cause chronic kidney disease. [1,2]

In the developing countries, high BP is a serious problem than in the developed countries, with very high rates of stroke. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths. [3] Among all types of hypertension, 90% to 95% is essential hypertension. [3,4] One of the main and modifiable risk factor for hypertension is stress. [2]

According to WHO, stress is a significant problem which affect physical and mental health of people. [5] Stress has a relationship between the person and the environment that is appraised by the person, as taxing and exceeding his or her resources and endangering his or her well-being. [6] State of stress leads to negative emotions like fear, anxiety, uneasiness, panic and irritation can always cause muscular tension. [7,8] Relaxation is a process of maintaining a stable environment in the body. Mitchell's physiological relaxation technique is based on reciprocal inhibition relaxation which includes diaphragmatic breathing and series of ordered isotonic contractions. [9] This technique brings about postural realignment by reversing stress related posture termed as 'punching position'. This position is commonly adopted during working hours at desk like forward head, clenched jaw, rounded shoulders, bend elbow and crossed legs. These position increase muscular tension and has effect on nervous and endocrine system by release of epinephrine and nor epinephrine which leads to physical illness. [10] Mitchell's relaxation technique causes relaxation response phenomenon which has a wide spread effect on cardio-respiratory system and helps to attain a state of deep relaxation meditation. [11]

Breathing technique with meditation reduces stress by stimulating parasympathetic nervous system. [12] Earlier studies have shown reduction in blood pressure with Mitchell's relaxation technique on normal subjects. [7] Also there was a study done comparing Mitchell's simple physiological relaxation and Jacobson's progressive relaxation on normal individual, both the intervention showed significantly reduces blood pressure but there was no significant difference effect between both intervention. [13] Indeed studies investigating effect of Mitchell's relaxation on essential hypertensive patients are scarce. Hence this study intends to study the effect of Mitchell's relaxation technique and meditation on reducing blood pressure in essential hypertensive patients and to study the effect of Mitchell's relaxation and meditation technique on stress level in essential hypertensive patients.

Methodology

Patients were recruited from a tertiary care hospital. 58 patients were screened out of which 30 did not meet the inclusion criteria. 28 who met the inclusion criteria were allocated into two groups, group A and group B by lottery method. The inclusion criteria- patients with essential hypertension, age ranging from 45 to 60 years and willing to participate. Exclusion criteria- Patients with secondary hypertension, diabetes, any other unstable cardiac conditions, any neurological problems like peripheral nerve injury, central nervous system involvement and any respiratory diseases like obstructive and restrictive lung diseases. Based on these condition patients were randomly located into two groups, 15 in group A and 13 in group B by lottery method. A calibrated mercury sphygmomanometer was use to measure systolic and diastolic blood pressure. Pulse rate was recorded by radial side of wrist. A perceived stress scale-10(PSS-10) was used to measure the stress level consisting of ten items with Likert scale of 0 to 4. This scale has inter-reliability of the instrument is 0.81. [14]

Procedure

After the approval from the Institutional Ethical committee, subjects was recruited in the study that fulfilled the inclusion criteria. The purpose of the study was explained and a written informed consent was obtained from all patients. The patients who agreed were adequately assessed and allocated into two groups. All patients were on antihypertensive therapy including dietary advice which was prescribed by a physician. Group A received diaphragmatic breathing with Meditation for 20 minutes which was well explained demonstrated to patients. Group B received Mitchell's relaxation technique which was carried out with clear instruction and demonstration by therapist. Patients were explained about the punching position, the principle of reciprocal inhibition and 13 components of the technique. Blood pressure and pulse rate was noted 5 minutes before each session and stress level was recorded on day 1 prior to intervention for both the groups. Formal training was carried out for 1 week, 20 minutes session. Patients were asked to wear loose outfits and formal training was carried out in a quiet room for 20 minutes per day for one week. After the training blood pressure and pulse rate was measured 10 minutes later to each session for both the groups. On 7th day stress level was recorded for both the groups after the completion of intervention.

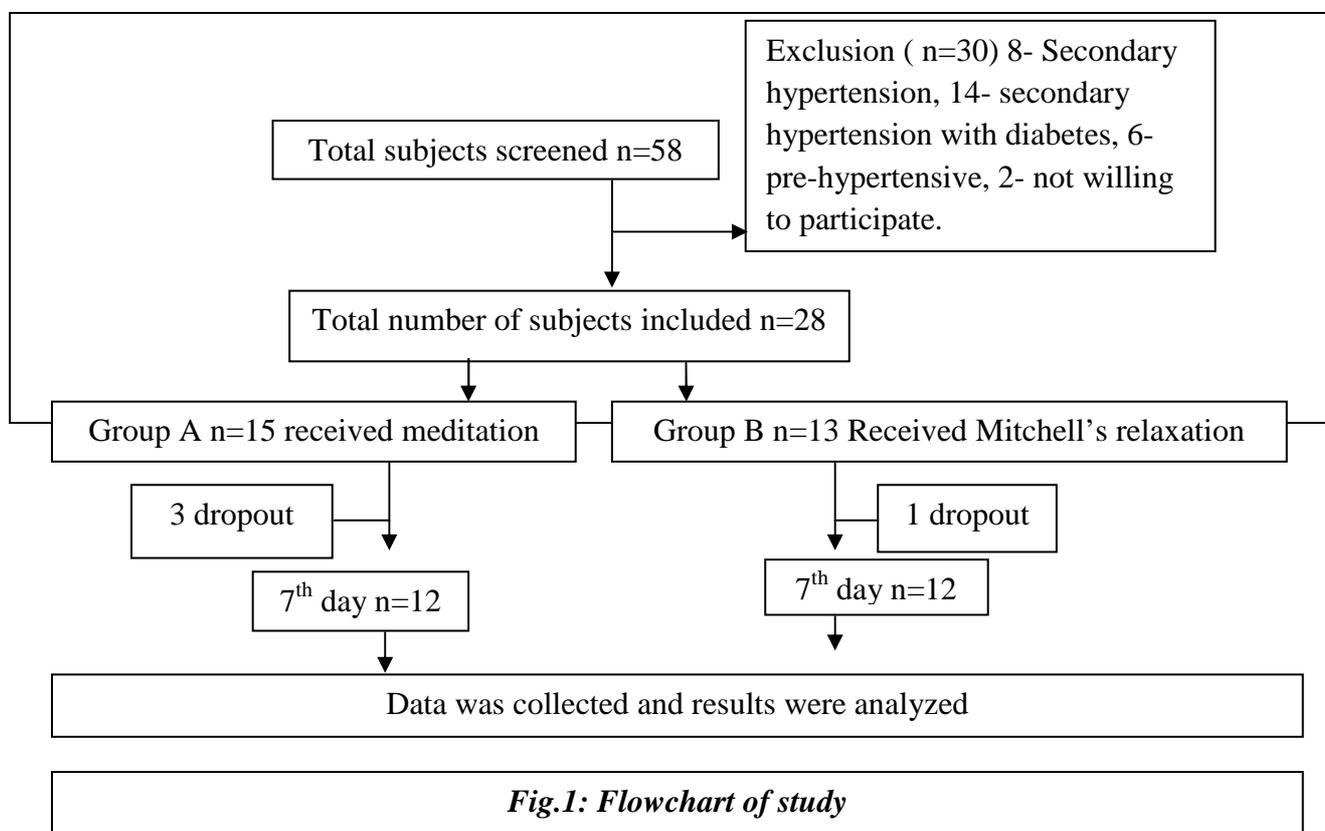


Fig.1: Flowchart of study

Statistical analysis

Data was statistically analyzed using student t-test to compare between group A and group B for demographic data age and gender and for systolic blood pressure, diastolic blood pressure, pulse rate and perceived stress scale-10.

Results

Demographic characteristics: the mean age of all the subjects in group A was 55.6 ± 2.75 years and group B was 52.1 ± 4.61 , there was no significant difference in the age of both the groups ($p=0.054$) suggesting that both the groups were homogeneous. There were 24 subjects who completed the study, 12 in each group. In group A, there were 4 males and 8 females and in group B there were 5 males and 7 females, statistical test suggests that the group were homogeneous in gender distribution ($p=1.00$). [Table 1]

Table1: Demographic data of control and group B

	Group A	Group B	T	P
Age(years)	55.6±2.75	52.1±4.61	2.062	0.054
Gender(m/f)	15(4/11)	13(5/8)	0	1

Systolic blood pressure on day 1 and day 7, there was decrease in systolic blood pressure by 5.8±3.19 mm Hg in group A and 10.8±2.86 mm Hg in group B. even though both the groups had shown decrease in systolic blood pressure but there was significant decrease in group B (p=0.002) suggesting Mitchell relaxation group is more effective as compare to meditation group. [Table 2]

Table2: Difference in systolic/ diastolic blood pressure, pulse rate in group A and group B pre and post intervention on day 1 and day 7

Systolic BP								
Group	Day 1			Day7			Day1-Day 7	
	Pre	Post	Difference	Pre	Post	Difference	Pre	Post
Group A	148 ±1.88	145.6 ±2.27	2.4 ± 1.57	143.8 ± 2.20	139.8 ± 3.05	4 ± 2.11	4.2 ± 2.39	5.8 ± 3.19
Group B	147.8 ± 2.89	143.4 ± 2.83	4.4 ± 1.57	141.2 ± 2.53	132.6 ± 2.99	8.6 ± 1.64	6.6 ± 2.67	10.8 ± 2.86
T	0.183	1.918	2.835	2.452	5.334	5.438	2.114	3.691
P	0.857	0.72	0.011	0.025	<0.001	<0.001*	0.049	0.002*
Diastolic BP								
Group A	97.4 ± 6.53	95.2 ± 5.97	2.2±2.20	90.8 ± 8.01	87.4 ± 7.77	3.4 ± 3.27	6.6 ± 3.89	7.8 ± 3.94
Group B	96.2 ± 7.62	94.2 ± 8.24	2 ± 1.88	89.2 ± 6.61	84 ± 7.60	5.2 ± 2.69	7 ± 2.54	10.2 ± 4.26
T	0.378	0.311	0.218	0.487	0.989	1.342	0.272	1.308
P	0.71	0.76	0.83	0.632	0.336	0.196	0.789	0.207
Pulse rate								
Group A	81.4 ± 2.22	79.7 ± 2.71	1.7 ± 1.63	76.7 ± 1.56	74.3 ± 2	2.4 ± 0.84	4.7 ± 1.33	5.4 ± 1.83
Group B	82.7 ± 4.16	80.2 ± 3.64	2.5 ± 1.26	76.7 ± 3.09	73.1 ± 3.51	3.6 ± 2.17	6 ± 1.63	7.1 ± 3.31
T	0.871	0.348	1.222	0	0.939	1.63	1.948	1.418
P	0.395	0.732	0.238	1	0.36	0.121	0.067	0.173

Diastolic blood pressure on day 1 and day 7, there was a decrease in diastolic blood pressure by 7.8±3.94 mm Hg in group A and 10.2±4.26 mmHg in group B. There was equal decrease in diastolic blood pressure in both the groups suggesting Mitchell's relaxation and meditation are equally effective. Although there was no significant difference in both the groups but there was a clinical difference seen in group B (10.2±4.26) as compare to group A (7.8±3.94). [Table 2]

Pulse rate on day 1 and day 7, there was decrease in pulse rate by 5.4±1.83 bpm in group A and 7.1±3.31 bpm in group B. There was equal decrease in the both the groups suggesting meditation and Mitchell's relaxation are equally effective in reducing pulse rate. Even though there was no statistical significance but there was clinical difference in group B (7.1±3.31) as compared to group A (5.4±1.83). [Table 2]

Perceived stress scale-10(PSS-10) on day 1 and day 7, there was decrease in perceived stress scores in group A by 6.0 ± 2.35 and in group B by 11.4 ± 3.56 . There was decrease in stress scores seen in both the groups but, group B showed significant difference reduction in scores as compared to group A suggesting Mitchell's relaxation is better compared to meditation. [Table 3]

Table3: Difference in Perceived Stress Scale-10 in group A and group B

Perceived Stress Scale-10	Day 1	Day7	Difference
Group A	24.2 ± 1.81	18.2 ± 1.99	6 ± 2.35
Group B	28.3 ± 3.02	16.9 ± 3.57	11.4 ± 3.56
T	3.68	1.005	3.995
P	0.002*	0.328	0.001*

Discussions

Essential hypertension is one of the medical problems which have many treatment methods; physiotherapy is also an adjunct method for patients with essential hypertension. The patients recruited for the study were between the age of 45 to 60 years with their mean age 55.6 ± 2.7 years for group A and 52.1 ± 4.61 mean age for group B reflects groups were homogeneous in character. The gender distribution of study was 9 males and 19 females and total number patients were 28. Salt and Karr studied on 24 normotensive young participant where 10 men 14 women, and had assessed blood pressure and pulse rate, however study was in line with the present study.

Blood pressure regulation is an involuntary process controlled by sympathetic nervous system and hypothalamus and limbic system, which plays a main role in emotional changes.

There is a relation between emotional behavior and blood pressure.⁽¹⁶⁾ In stress, 'fight-or-flight' physiological response (reaction that either prepare our body to stay and fight or flee from the situation) are seen which activates sympathetic nervous system thereby causes an increase in blood pressure. In this study stress component has been undertaken and had showed stress level in essential hypertensive patients is moderately high as recorded using Perceived Stress Scale-10 before intervention. After intervention it was noticed that, there was reduction in stress level in both groups however stress level reduced significantly in group B than group A. This could be because of increased stress level can cause increase tension in skeletal muscles and this relaxation technique helps to reduce the tension in the muscle thereby reduces blood pressure and stress level. Studies have shown reduction in muscles tension using electromyography after Mitchell's relaxation which is in line with our study. [17] Studies have also shown that diaphragmatic breathing with meditation has a positive effect on controlling and reducing blood pressure and pulse rate. It also reduces stress level in essential hypertensive patients. [18] This study has also showed reduction in blood pressure and pulse rate in both groups and was better in Mitchell's relaxation training group.

Salt and Karr noted that there was an immediate effect of Mitchell's relaxation with diaphragmatic breathing on normal individual on pulse rate. [13] The present study also noted positive effect on blood pressure, pulse rate to reduce the stress level among the participants however reduction in pulse rate was not significant, this may be because relaxation is more beneficial when it is performed in quite environment, with concentration, passive attitude and comfortable position, in this study quite environment and comfortable positions were used, so it may be that subjects might have poor concentration.

Studies have found beneficial effect of cognitive behavioral techniques [19, 20] which includes relaxation and meditation in reduction of stress, anxiety and enhancement in quality of life in elderly people in order to avoid the side effects of anti hypertensive drugs.[20]

In this study Mitchell's relaxation technique and meditation was used and found positive effect on blood pressure and stress hence it can be used in elderly population. Studies done on pharmacological and non-pharmacological treatment with and without relaxation therapy for hypertension found relaxation therapy along with lifestyle modification showed long term effect if practiced on daily basis.[21] Mitchell's relaxation therapies which is easy to perform and can show positive result if combined with lifestyle modification in pre hypertensive's, essential hypertensive's and elderly patients.

Limitation

Small sample as many did not show interest to undergo the stress reduction due to working hours. The intervention duration was less hence may have less effect of protocol.

Conclusion

We conclude that Mitchell's relaxation is more effective for control of blood pressure in essential hypertensive patients compare to meditation and can be used as an adjunctive treatment along with drug therapy on essential hypertensive patients. It can be practiced as one of the lifestyle modification in pre-hypertensive and essential hypertensive patients.

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