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Pilot study of a brief hypnotic induction: Effects on blood pressure, heart rate, and subjective distress in patients diagnosed with hypertension

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ABSTRACT

The feasibility of hypnotherapy interventions for lowering blood pressure and psychological stress in hypertensive patients was investigated in a pilot study. The research objective was to determine the effect of audio hypnotherapy on blood pressure, stress levels, and heart rate in primary hypertension patients. The study randomized 64 hypertensive patients to the intervention or usual care. The intervention group received hypnotherapy through audio recordings for 15 minutes, while the control group took a rest for about 15 minutes. Blood pressure and heart rate were measured with digital tensimeter and stress levels with the Subjective Units of Distress Scale. Data analysis used Kruskal Wallis Test. The results showed a significant difference between the intervention and control groups with p value < .001 for decreasing in systolic blood pressure and p value < .001 for decreasing in stress levels. This pilot study suggests that a hypnotherapy intervention may be feasible and of benefit in a clinical population of hypertensive patients, however further study is needed.

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Blood pressure; Heart rate; Hypertension; Hypnotherapy; Stress level

Introduction

Hypertension is one of the main causes of cardiovascular disease (World Health Organization, 2019). Hypertension can be diagnosed when a person's systolic blood pressure (SBP) is more than 140 mm Hg and/or their diastolic blood pressure (DBP) is more than 90 mm Hg following repeated examination (Unger et al., 2020).

The prevalence of uncontrolled hypertension is pervasive and there is a pressing need for effective interventions. It has been estimated that the prevalence of uncontrolled hypertension is as high as 67.2% (Goverwa et al., 2014). Consistent with this, Tesfaye et al. (2017) reported the incidence of uncontrolled hypertension may be greater than 52.7%.

Factors associated with uncontrolled blood pressure include age, smoking history, excessive salt consumption, physical activity, lack of alcohol consumption, obesity, non-adherence to therapy, and secondary diseases including diabetes, hypercholesterolemia, myocardial infarction and kidney disease (Upoyo et al., 2021; Yang et al., 2014). Stress can

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also affect hypertension (Liu et al., 2017). Research results show stress affects blood pressure; if stress increases, risk of hypertension will increase (Jadhav et al., 2014). Stress can stimulate the sympathetic nerves, which causes an increase in heart rate and blood pressure (Kastubi et al., 2017).

Hypertension management includes pharmacological and nonpharmacological treatments. Pharmacological treatment for hypertension can cause side effects and low patient compliance, so nonpharmacological techniques are needed to manage hypertension, such as healthy diet, weight loss, exercise, decreased alcohol intake, and psychological interventions to reduce stress and anxiety such as hypnotherapy (Jakubovits & Kekecs, 2017).

Hypnotherapy may have the potential to reduce stress and reduce hypertension, but research on the effectiveness of hypnosis or hypnotherapy in stress reduction is as yet unclear (Fisch et al., 2017). Hypnosis provides autonomic responses such as heart rate and anxiety (de Jong et al., 1975). Research with beat-to-beat variability spectrum analysis in electrocardiography has shown that hypnosis affects heart rate variability, shifting the balance of sympathetic-vagal interactions toward increased parasympathetic activity and decreased sympathetic tone (DeBenedittis et al., 1994). The previous research results showed that hypnosis was effective in lowering blood pressure in the short term as well as in the medium and long term but did not find any association between the practice of self-hypnosis with the evolution of blood pressure, anxiety, personality factors, and therapeutic outcomes (Gay, 2007).

The purpose of the present study was to explore the potential effect of an audio hypnotherapy intervention on blood pressure, stress levels, and heart rate of hypertensive patients.

Method

Design

The study design was a randomized pilot study with intervention and control groups. The treatment given to the intervention group was to listen to hypnotherapy recordings for 15 minutes using a headset in the afternoon. The recorded stages of hypnotherapy include relaxation, deep relaxation, suggestion, and awakening. The script is available online as a supplemental document. Recordings are made in the form of mp3 files and played back using a smartphone. In the control group, participants were instructed to sit back and relax for 15 minutes.

Participants

The research was conducted in Banyumas Regency, Central Java, Indonesia. Participants were primary hypertensive patients. The inclusion criteria in this study were patients with a diagnosis of hypertension with blood pressure 140/90 mmHg or higher, mild to moderate stress levels, and willingness to become research respondents. Meanwhile, the exclusion criteria in this study were respondents who were sick and unable to attend therapy, experienced hearing problems, and/or experienced complications of other diseases (kidney disease, heart disease, diabetes mellitus, and stroke). After providing informed consent to

participants who met the inclusion criteria, 64 hypertensive patients agreed to participate in the study. Participants were divided into two groups by lottery, 32 odd numbers into the intervention group and 32 even numbers into the control group.

Measures

Measurement of blood pressure, heart rate, and stress level were carried out twice, namely before and after treatment. The instruments used in this study were a digital tensimeter and the Subjective Units of Distress Scale (SUDs) observation sheet. SUDs is commonly used for anxiety (Benjamin et al., 2010). SUDs is an 11-point self-report scale (0 = *no distress*; 10 = *highest distress possible*) routinely used to measure change in distress. The SUDs's validity has been demonstrated, and research has shown it to correlate with levels of depression and anxiety (Kim et al., 2008).

Data Analysis

Data were processed using SPSS version 16. Data analysis used Kruskal Wallis test because the data were not normally distributed in each variable ($p < .05$).

Ethical Consideration

This research received approval from the Health Research Ethics Commission of the Faculty of Health Sciences, Jenderal Soedirman University Indonesia No. 094/EC/KEPK/V/2020. Researchers explained informed consent before the study.

Results

Participants involved in this study were 64 patients with primary hypertension who were randomized to either the intervention group or control group. Each group consisted of 32 hypertension patients. Characteristics of respondents can be seen in Table 1. Participants

Table 1. Respondent Characteristic (N = 64)

	Intervention group (n= 32)		Control group (n= 32)	
Characteristic	f (%)	Mean (SD)	f (%)	Mean (SD)
Age		62.56 (6.87)		62.53 (7.76)
Sex	5 (7.8)		4 (6.2)	
Man	27 (42.2)		28 (43.8)	
Woman				
Level education	24 (37.5)		25 (39.1)	
Elementary	5 (7.8)		4 (6.2)	
Junior	3 (4.7)		3 (4.7)	
Senior				
Occupation	22 (34.4)		25 (39.1)	
No work	10 (15.6)		7 (10.9)	
Active work				
BMI		25.97(4.28)		24.47(4.31)

Table 2. Differences in Blood Pressure, Heart Rate, and Stress Levels before and after Treatment

			Mean (SD)			
Variables	Group	n	Pre	Post	Post – Pre	*p* value*
Systole	Intervention	32	155.12 (17.07)	147.69 (16.37)	7.44 (4.53)	<.001
	Control	32	157.47 (16.49)	154.75 (19.13)	2.72 (10.29)	
Diastole	Intervention	32	95.78 (7.65)	90.62 (8.47)	5.16 (4.85)	.066
	Control	32	99.09 (11.62)	95.50 (11.88)	3.59 (5.12)	
Heart rate	Intervention	32	81.47 (9.00)	78.06 (9.96)	3.41 (5.91)	.180
	Control	32	85.97 (9.85)	84.16 (10.25)	1.81 (5.28)	
Stress Level	Intervention	32	3.56 (0.98)	2.53 (0.92)	1.03 (0.54)	<.001
	Control	32	2.78 (0.71)	2.56 (0.84)	0.22 (0.55)	

*Kruskal Wallis test.

had an average age of 62 years with a standard deviation of 6.87 for the intervention group and 7.76 for the control group. The participants' mean body mass index (BMI) indicated overweight-obesity.

The results showed that there was a decrease in blood pressure, heart rate, and stress levels in both the intervention and control groups (see Table 2). However, in the intervention group, the decrease in systolic blood pressure was larger with decreasing SBP (mean = 7.44 mmHg) than in the control group with decreasing SBP (mean = 2.72). Likewise with stress levels, the decrease in the intervention group was larger than the control group. In the intervention group, the stress level decreased with SUDs (mean = 1.03), while in the control group decreased with SUDs (mean = 0.22). Based on the comparative analysis of decreases in blood pressure, heart rate, and stress levels, there was a significant difference in the reduction in systolic blood pressure and stress levels between the intervention group and the control group (p value < .001), while the decrease in diastolic blood pressure and heart rate did not show a significant difference (p value > .05).

Discussion

The characteristics of respondents between the intervention group and the control group showed homogeneity with an average age of 62 years, mostly women, low education, and a BMI indicating overweight to obesity. Participant age correlates with the prevalence of hypertension; as age increases, so does the risk of hypertension (Saju et al., 2020). The prevalence of hypertension also increases in women with increasing age (Ramirez & Sullivan, 2018). BMI also affects hypertension; the risk of hypertension increases as BMI increases. Being overweight and obese can contribute significantly to the incidence of hypertension (Al Marri & Al-Hamad, 2020).

Based on blood pressure, study participants showed hypertension Grade I to II. Grade I hypertension is when the systolic blood pressure is 140 to 159 mmHg and/or diastolic pressure is 90 to 99 mmHg, while Grade II hypertension is when the systolic blood pressure is greater than 160 mmHg, and the diastolic blood pressure is more than 100 mmHg (Unger et al., 2020). After the intervention, participants in the intervention group showed a significant decrease in blood pressure; systolic blood pressure decreased 7.44 mmHg, and diastolic blood pressure decreased 5.16 mmHg. Heart rate in the intervention group also decreased significantly with an average decrease of 3.41 times per minute with a standard deviation of 5.91.

Respondents' stress levels showed mild to moderate stress before the intervention. After the intervention, there was a significant decrease in stress levels in the intervention group ($p < .05$). The average reduction in SUDs in the intervention group was 1.03, while in the control group it was 0.22. A significant relationship was found between mental stress and hypertension, increased stress, increased risk of hypertension. Mental or psychosocial stress is one of the main risk factors for hypertension, which in itself is a risk factor for various other cardiovascular diseases (Jadhav et al., 2014).

The results of the study are consistent with the study by Olendzki et al. (2020), which found a mindful hypnotherapy to be effective in reducing stress. It may be that a hypnosis induction facilitates internal focus and openness to suggestions with relaxed images that provide a safe and peaceful mental environment to experience mindfulness throughout the session.

Limitations of this pilot study include a predominantly female population, a very small sample size (64 participants), the very brief duration of intervention does not inform long-term benefits, lack of measurement of hypnotizability, and use of a simple subjective rating of stress.

Conclusion

Audio hypnotherapy may be beneficial for controlling blood pressure, stress levels, and heart rate of hypertensive patients. However, there is a need for further study to determine clinical benefit. Future studies are needed with a fully powered sample size and objective measures of both hypertension and stress, with long-term follow-up.

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Disclosure Statement

No potential conflict of interest was reported by the author(s).

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Pilotstudie zu einer kurzen hypnotischen Induktion: Auswirkungen auf Blutdruck, Herzrate und subjektives Leiden von Patienten mit einer Bluthochdruck Diagnose

ARIF SETYO UPOYO, ENDANG TRIYANTO, UND AGIS TAUFIK

Zusammenfassung: Die Durchführbarkeit hypnotherapeutischer Interventionen zur Senkung des Blutdrucks und des psychologischen Stresses bei Hochdruckpatienten wurde in einer Pilotstudie untersucht. Forschungsziel war es, die Wirkung von Hypnotherapie über Audio auf Blutdruck, Stressniveau und Herzrate bei Patienten mit primärer Hypertonie zu ermitteln. Für die Studie wurden 64 Hochdruckpatienten nach Zufall der Intervention oder der üblichen Versorgung zugewiesen. Die Interventionsgruppe erhielt eine über Audioaufnahme übermittelte 15-minütige Hypnotherapie, während die Kontrollgruppe sich 15 Minuten ausruhte. Blutdruck und Herzrate wurden mit digitalem Tensometer gemessen, das Stressniveau mittels der Subjective Units of Distress Scale. Die Datenanalyse erfolgte mithilfe des Kruskal Wallis Test. Die Ergebnisse zeigten einen signifikanten Unterschied zwischen Interventions- und Kongrollgruppe mit einem p-Wert von < .001 für sinkenden systolischen Blutdruck und einen p-Wert von < .001 für abnehmendes Stressniveau. Diese Pilotstudie legt nahe, dass eine hypnotherapeutische Intervention für eine klinische Population von Hochdruckpatienten durchführbar und von Nutzen sein kann, allerdings bedarf es weiterer Forschung.

ALIDA IOST-PETER
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Étude pilote d'une brève induction hypnotique: effets sur la tension artérielle, la fréquence cardiaque et la détresse subjective chez les patients chez lesquels on a diagnostiqué une hypertension

ARIF SETYO UPOYO, ENDANG TRIYANTO, ET AGIS TAUFIK

Résumé: La faisabilité des interventions d'hypnothérapie pour diminuer la tension artérielle et le stress psychologique chez les patients hypertendus a été étudiée dans une étude pilote. L'objectif de la recherche était de déterminer l'effet de l'hypnothérapie par audio sur la pression artérielle, les niveaux de stress et la fréquence cardiaque chez les patients souffrant d'hypertension primaire. L'étude a randomisé 64 patients hypertendus à l'intervention par hypnose ou aux soins habituels. L'hypnothérapie a été délivré dans le groupe d'intervention par le biais d'enregistrements audio pendant 15 minutes, tandis que le groupe témoin s'est reposé pendant environ 15 minutes. La pression artérielle et la fréquence cardiaque ont été mesurées avec un tensiomètre numérique et les niveaux de stress avec l'échelle des unités subjectives de détresse. L'analyze des données a utilisé le test de Kruskal Wallis. Les résultats ont montré une différence significative entre les groupes d'intervention et de contrôle avec une valeur p < 0,001 pour la diminution de la pression artérielle systolique et une valeur p < 0,001 pour la diminution des niveaux de stress. Cette étude pilote suggère qu'une intervention d'hypnothérapie peut être faisable et bénéfique dans une population clinique de patients hypertendus, mais une étude plus approfondie est nécessaire.

GÉRARD FITOUSSI, M.D.
President-elect of the European Society of Hypnosis

Estudio piloto de una breve inducción hipnótica: Efectos sobre presión arterial, ritmo cardiaco y estrés subjetivo en pacientes diagnosticados con hipertensión

ARIF SETYO UPOYO, ENDANG TRIYANTO, Y AGIS TAUFIK

Resumen: Se investigó en este estudio piloto la factibilidad de realizar intervenciones hipnoterapéuticas para reducir presión arterial y estrés psicológico en pacientes hipertensos. El objetivo de la investigación fue determinar el efecto de una hipnoterapia auditiva sobre presión arterial, niveles de estrés y ritmo cardíaco en pacientes con hipertensión primaria. El estudio asignó aleatoriamente a 64 pacientes hipertensos a la intervención o al tratamiento usual. El grupo de intervención recibió hipnoterapia mediante audio grabación durante 15 minutos, mientras que el grupo control descansó durante 15 minutos aproximadamente. La presión arterial y la frecuencia cardiaca fueron medidas con un tensiómetro digital y los niveles de estrés con la Escala de Unidades Subjetivas de Ansiedad (SUDS por sus siglas en inglés). El análisis de datos se realizó mediante la prueba de Kruskal Wallis. Los resultados mostraron una diferencia significativa entre los grupos de intervención y control con un valor $p < .001$ para la disminución de la presión sistólica y un valor $p < .001$ para la disminución en los niveles de estrés. Este estudio piloto sugiere que una intervención hipnoterapéutica puede ser factible y de beneficio en una población clínica de pacientes hipertensos, aunque se requiere más investigación.

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