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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 to the intervention or usual care. The intervention group received hypnotherapy through audio recordings for 15 minutes, while the control group took a rest 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 < 0.001 for decreasing in systolic blood pressure and p value <0.001 for decreasing in stress levels. This pilot study suggests that a hypnotherapy intervention may be feasible and may be of benefit in a clinical population of hypertensive patients, however further study is needed.

Keywords: Hypertension, Hypnotherapy, Blood Pressure, Stress level, Heart rate

Hypertension is one of the main causes of cardiovascular disease (World Health Organization, 2019). Hypertension can be diagnosed when persons 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, 2014). Consistent with this, Tesfaye et al (2017) reported 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 (Yang et al, 2014; Upoyo AS, 2021). Stress can also affect hypertension (Liu, 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, 2017).

Hypertension management includes pharmacological and non-pharmacological. Pharmacological treatment for hypertension can cause side effects and low patient compliance, so non-pharmacological 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 M.A,

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, 1994). The previous research results showed that hypnosis was effective in lowering blood pressure in the short term, but also 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 (Claire 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.

Materials and methods

Design

The study design was a randomized pilot study with an intervention and control group. 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.

Partisipants

The research was conducted in Banyumas Regency, Central Java, Indonesia. Partisipants were primary hypertensive patients. The inclusion criteria in this study were patients with a diagnosis of hypertension with blood pressure ≥ 140/90 mmHg, mild-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 experienced

complications of other diseases (kidney disease, heart disease, diabetes mellitus, and stroke). After providing informed consent to participants who met the inclusion and exclusion criteria, 64 hypertensive patients agreed to participate in the study. Participants were divided into 2 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 was 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 commonly is used for anxiety (Benjamin, 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 scale's validity has been demonstrated, and research has shown it to correlate with levels of depression and anxiety (Kim, Bae, & Park, 2008).

Data Analysis

Data were processed using SPSS version 16. Data analysis used Kruskal Wallis Test because the data is not normally distributed in each variable ($p < 0.05$).

Ethical consideration

This research has previously received approval from the Health Research Ethics Commission of the Faculty of Health Sciences, Jenderal Soedirman University Indonesia no. 094 / EC / KEPK / V / 2020. Researcher 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 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 higher 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 higher 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 <0.001), while the decrease in diastolic blood pressure and heart rate did not show a significant difference (p value> 0.05).

Discussion

The characteristics of respondents between the intervention group and the control group showed homogeneity with an average age of 62 years, most of them were women, had low education, BMI overweight - obesity. Age correlates with the prevalence of hypertension. The older the risk of hypertension increases (Saju et al, 2020). The prevalence of hypertension also increases in women with increasing age (Ramirez & Sullivan, 2018). BMI also affects hypertension, the more obesity the risk of hypertension increases. Overweight and obesity that could contribute significantly to the incidence of Hypertension (Al Marri & Al-Hamad, 2020)

Based on blood pressure, study participants showed hypertension grade I - II. Grade I hypertension is when the systolic blood pressure is 140-159 mmHg and or diastolic pressure is 90-

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, 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 3.41 times per minute with a standard deviation 5.91.

Respondent's stress level showed mild-moderate stress before the intervention. After the intervention, there was a significant decrease in stress levels in the intervention group ($p < 0.05$). 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) 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 that the population was predominantly female, there was a very small sample (64 participants), the very brief duration of intervention does not inform long-term benefits, lack of measurement of hypnotizability, and used a simple subjective rating of stress.

Conclusion

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

References

AlMarri, E. A., & Al-Hamad, J. (2020). Prevalence of obesity among hypertensive patients in Primary Care Clinic, Security Forces Hospital, Riyadh, Saudi Arabia 2017-2018: A prospective cross-sectional study. *Journal of Family Medicine and Primary Care*, *9*(4), 1885–1890. https://doi.org/10.4103/jfmpc.jfmpc_1190_19

Benjamin, C. L., O'Neil, K. A., Crawley, S. A., Beidas, R. S., Coles, M., & Kendall, P. C. (2010). Patterns and predictors of subjective units of distress in anxious youth. *Behavioural and Cognitive Psychotherapy*, *38*(4), 497–504. https://doi.org/10.1017/S1352465810000287

de Jong, M. A., van den Berg, A. W., & de Jong, A. J. (1975). Hypnosis, stimulus preference and autonomic response. *Psychotherapy and Psychosomatics*, *26*(2), 78–85. https://doi.org/10.1159/000286914

DeBenedittis, G., Cigada, M., Bianchi, A., Signorini, M. G., Cerutti, S. (1994). Autonomic changes during hypnosis: a heart rate variability power spectrum analysis as a marker of sympatho-vagal balance. *International Journal of Clinical and Experimental Hypnosis*, *42*(2), 140–152. https://doi.org/10.1080/00207149408409347

Fisch, S., Brinkhaus, B., Michael.T. (2017). Hypnosis in patients with perceived stress – a systematic review. *BMC Complementary and Alternative Medicine*. 17. 10.1186/s12906-017-1806-0.

Goverwa, T. P., Masuka, N., Tshimanga, M., Gombe, N. T., Takundwa, L., Bangure, D., Wellington, M. (2014). Uncontrolled hypertension among hypertensive patients on treatment in Lupane District, Zimbabwe, 2012. *BMC Research Notes*, *7*, 703. https://doi.org/10.1186/1756-0500-7-703

Jadhav, S. B., Jatti, G. M., Jadhav, A. S., Rajderkar, S. S., Naik, J. D., & Nandimath, V. A. (2014). Stressing 'mental stress' in hypertension: A rural background study. *Journal of Clinical and Diagnostic Research*, *8*(6), JC04–JC7. https://doi.org/10.7860/JCDR/2014/8209.4506

Jakubovits, E., & Kekecs, Z. (2017). The treatment of hypertension with hypnosis. *In Handbook of medical and psychological hypnosis: Foundations, applications, and professional issues* (Elkins, G. Ed.), p. 273–281. Springer Publishing Company.

Jensen, M. P., & Patterson, D. R. (2014). Hypnotic approaches for chronic pain management: clinical implications of recent research findings. *American Psychologist*, *69*(2), 167–177. https://doi.org/10.1037/a0035644

Kastubi, K., Minarti, M., & Saudah, N. (2017). Hypnotherapy decreases stress in elderly hypertension. *International Journal of Nursing and Midwifery Science,* 1(1), 1-10. https://doi.org/10.29082/IJNMS/2017/Vol1/Iss1/8

Kim, D., Bae, H., & Park, Y. C. (2008). Validity of the subjective units of disturbance scale in EMDR. *Journal of EMDR Practice and Research,* *2*(1), 57–62. https://doi.org/10.1891/1933-3196.2.1.57

Liu, M. Y., Li, N., Li, W. A., & Khan, H. (2017). Association between psychosocial stress and hypertension: a systematic review and meta-analysis. *Neurological Research*, *39*(6), 573–580. https://doi.org/10.1080/01616412.2017.1317904

Marie-Claire Gay (2007). Effectiveness of hypnosis in reducing mild essential hypertension: A one-year follow-up. *International Journal of Clinical and Experimental Hypnosis*, 55(1), 67-83, DOI: 10.1080/00207140600995893

Olendzki, N., Elkins,G.., Slonena, E., Hung., J. & Rhodes,J. (2020). Mindful Hypnotherapy to reduce stress and increase mindfulness: A randomized controlled pilot study. *International Journal of Clinical and Experimental Hypnosis*, 68(2), 151-166, DOI: 10.1080/00207144.2020.1722028

Ramirez, L. A., & Sullivan, J. C. (2018). Sex Differences in Hypertension: Where We Have Been and Where We Are Going. *American Journal of Hypertension*, *31*(12), 1247–1254. https://doi.org/10.1093/ajh/hpy148

Saju, M. D., Allagh, K. P., Scaria, L., Joseph, S., & Thiyagarajan, J. A. (2020). Prevalence, Awareness, Treatment, and Control of Hypertension and Its Associated Risk Factors: Results from Baseline Survey of SWADES Family Cohort Study. *International Journal of Hypertension*, *2020*, 4964835. https://doi.org/10.1155/2020/4964835

Tesfaye, B., Haile, D., Lake, B., Belachew, T., Tesfaye, T., Abera, H., (2017). Uncontrolled hypertension and assosiated factors among adult hypertensive patients on follow-up at Jimma University Teaching and Speliazed Hospitals: cross-sectional study. *Research Report in Clinical Cardiology*, 2017(8), 21-29. DOI: 10.2147/RRCC.S132126

Unger, T., Borghi, C., Charchar, F., Khan,N.A., Poulter, N.R., Prabhakaran, D.,Ramirez, A., Schlaich, M., Stergiou, G.S.,Tomaszewski, M., Wainford, R.D. (2020). 2020 International Society of Hypertension Global Hypertension Practice Guidelines. *Hypertension*. 75(6), 1334-1357. doi: 10.1161/HYPERTENSIONAHA.120.15026.

Upoyo, A.S, Setyopranoto, I., Pangastuti, H.S. (2021). The modifiable risk factors of uncontrolled hypertension in stroke: a systematic review and meta-analysis. *Stroke Research and Treatment*. Vol. 2021, article ID 6683256. https://doi.org/10.1155/2020/6683256

World Health Organization. (2019, September 13). *Hypertension*. https://www.who.int/news-room/fact-sheets/detail/hypertension

Yang, L., Xu, X., Yan, J., Yu, W., Tang, X., Wu, H., Parkin. C.L., (2014). Analysis on assosiated factors of uncontrolled hypertension among elderly hypertensive patient in Southern China: a community-based, cross-sectional survey. *BMC Public Health,* 14:903. https://doi.org/10.1186/1471-2458-14-903.

Table 1. Respondent Characteristic (n=64)

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

Table 2. Differences in blood pressure, heart rate and stress levels before and after treatment

Variables	Group	n	Mean (SD)			*p* value*
			Pre	Post	Post - Pre	
Systole	Intervention	32	155.12 (17.07)	147.69 (16.37)	7.44 (4.53)	< 0.001
	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)	0.066
	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)	0.180
	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)	< 0.001
	Control	32	2.78 (0.71)	2.56 (0.84)	0.22 (0.55)	

*Kruskal Wallis Test

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