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The effectiveness of mindfulness based stress reduction and sama vritti pranayama on reducing blood pressure, improving sleep quality and reducing stress levels in the elderly with hypertension

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ABSTRACT

Introduction: Increasing age has the potential to cause hardening of the arteries. Hypertension is also related to sleep quality and stress levels. Hypertension can be controlled with non-pharmacological therapy using Mindfulness Based Stress Reduction (MBSR) and samavriti pranayama. Samavriti pranayama increases the oxygen supply to the brain, lungs and lowers the heart rate. The purpose of this study was to determine the effectiveness of MBSR and samavriti pranayama for lowering blood pressure, improving sleep quality, and reducing stress levels.

Methods: This study utilized a cross-sectional model. Elders analyzed with hypertension were surveyed for qualification. A add up to of 40 seniors were randomized into the mediation and control bunches. Both bunches gotten schedule care. Eight sessions of MBSR and samavritti pranayama were conducted within the intercession bunch, whereas the control gather gotten no mental intercession. Elders were surveyed with respect to diminished hypertension, uneasiness, and rest quality at two unmistakable stages: some time recently and after the mediation.

Results: There were no significant differences in sociodemographic and clinical parameters between the intercession and control bunches at standard. The mediation program essentially lightened mental and physiological complications in elderly with hypertension. Particularly, the consider uncovered that 8 weeks of the combined MBSR and samavritti pranayama mediation viably decreased lower hypertension and uneasiness scores and made strides the quality of rest in elderly.

Conclusion: The conclusion MBSR combined with samavritti pranayama significantly alleviated clinical symptoms, and could be considered a new, effective psychotherapeutic intervention for Elderly with Hypertension.

Keywords: hypertension, sleep quality, stress level, mbsr, samavritti pranayama.
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INTRODUCTION

Hypertension is one of the most common cardiovascular diseases in the elderly. Hypertension is the number one cause of death in the world every year. Hypertension is one of the entrances or risk factors for diseases such as heart disease, kidney failure, diabetes and stroke. Based on the literatures, almost 12.8% of the whole yearly death or 7.5 million deaths around the world happen due to high blood pressure. This figure is anticipated to extend by 2025 to 1.56 billion grown-ups with hypertension.[1] All inclusive, 874 million grown-ups have a systolic blood weight of 140 mmHg and as many as 3.5 billion grown-ups have a systolic blood weight level that's not ideal, which is more than 110-115 mmHg. Agreeing to the Worldwide Burden of Illness Consider, problematic blood weight is to date the single biggest hazard figure contributing to all-cause mortality and the worldwide burden of infection. In line with this, as numerous as 9.4 million death happen each year due to high blood pressure.[2] Nationally, the predominance rate of hypertension in Indonesia is based on the comes about of basic wellbeing inquire experienced exceptional increment of 34.1% in 2018 compared to 27.8% in 2013.[3,4]

Hypertension can be prevented by controlling risky behavior and maintaining psychological health by avoiding pressure or stress.[5] Psychological stress can be seen from the symptoms of anxiety that arise, namely psychological symptoms and physical symptoms. When in a state of anxiety, the body will react by increasing the production of adrenal gland hormones and increasing the sympathetic nervous system. An increased sympathetic nervous system causes an increase in heart rate, respiratory rate, blood pressure and sweating in certain body parts such as the forehead and palms.[6] In addition to influencing stress levels, hypertension is also associated with sleep quality. Poor sleep quality can affect the increase in

blood pressure, the need for sleep for each person is different. The need for sleep in the elderly is 5-8 hours to maintain physical condition because age is getting older, so that some parts of the body cannot function optimally, so to prevent a decline in health, sufficient energy is needed with an appropriate sleep pattern. Complementary therapies such as MBSR and samavritti pranayama directly impact mental and physical health. So MBSR and samavritti pranayama emphasize on promotion, prevention and curative measures and help maintain normal blood pressure.[7,8] Therefore the purpose of this study was to determine the effectiveness of MBSR and samavriti pranayama for lowering blood pressure, improving sleep quality, and reducing stress levels.

METHODS

General Background of Research

The dependent variables in this study were sleep quality, blood pressure and stress levels, while the independent variables were the (MBSR) program and samavittri pranayama. The need for adequate sleep is determined by the quality of sleep and the number of hours of sleep (sleep quantity). Stress is defined as the inability to cope with the threats faced by the mental, physical, emotional, and spiritual of humans, which at one time can affect the human physical condition. Hypertension is related to sleep quality and stress levels because it is related to the sympathetic nervous response. The MBSR and samavittri pranayama programs aim to lower blood pressure by modifying cognitive and affective processes so that they affect the regulation of emotions, physical sensations, and self-confidence.

Sample of Research

The study involved 30 individuals with hypertension. Participants' inclusion criteria are; 1) patients who have mild to moderate high blood pressure; 2) Age 40–65 years; 3) Have never participated in the MBSR and samavittri pranayama programs; 4) has a stress score as measured by the perceived stress scale (PSS) at mild and moderate levels; 5) has a score of sleep quality disorders as measured by the pittsburgh sleep quality index (PSQI) scale at mild and moderate levels 6) has the physical ability to process in groups; 7) able to communicate, read and write; 8) willing to participate in research evidenced by informed consent. While the exclusion criteria were that participants were undergoing high blood pressure reduction interventions for both medical and psychological purposes.

Instrument and Procedures

This study uses instruments related to the mindfulness based stress reduction (MBSR) Program with samavittri pranayama. The MBSR program by applying the rules of the latest Kabat-Zinn MBSR curriculum which has been revised by Santorelli, Meleo-Meyer, and Koerbel (2017).[6,8] The program consists of 11 sessions conducted over 4 meetings. The sleep quality scale is a score obtained from respondents who have answered questions on the Indonesian version of the pittsburgh sleep quality index (PSQI), which consists of 7 (seven) components, namely subjective sleep quality, sleep latency, sleep duration, daily sleep efficiency. day, sleep disturbances, use of sleeping pills, and dysfunction of daytime activities. with a reliability value of 0.810 with a validity range of 0.4. In addition, it uses a Mindfulness scale, such as the kentucky inventory of mindfulness skills (KIMS) scale which aims to measure the participant's mindfulness condition. Consists of 24 items with a Cronbach Alpha reliability value of 0.846. Aiken's V value ranges from 0.65 to 0.95 with an average value of 0.846. In measuring stress, this study uses the perceived stress scale (PSS) which consists of 10 items. In addition, mini research uses exercise books, diaries, and observation sheets. An exercise book is a book containing exercise sheets used to write down all experiences and activity processes during the MBSR and samavittri pranayama programs. The exercise book contains several blank sheets that can be used for notes, a daily self-assessment sheet for the mood checklist, and an evaluation sheet at the end of the program. A diary is a book that serves as a daily routine evaluation process after independent meditation practices at home or outside sessions. The diary consists of two parts, namely a checklist and a descriptive about the experience during self-meditation practice. Furthermore, the observation sheet contains the behavioral aspects to be observed and then filled in and written down by the observer in detail, the results of the observations are used as supporting data.

Data Analysis

Data were analyzed in SPSS adaptation 15.0 and spoken to as cruel 6 standard deviation. Contrasts between bunches were analyzed by Student's t test or the chi square test as fitting. Factual importance was acknowledged at $p < 0.05$. Graphic investigation was carried out on the comes

Table 1. Differences in Blood Pressure before and after Mindfulness Based Stress Reduction and samavritti Pranayama.

Blood Pressure	Group		Mean	SD	P *value*
Sistol	Intervention	Before	155,00	11,146	<0,001*
		After	130,00	9,234	
	Control	Before	164,00	14,863	0.023*
		After	157,00	12,868	
Diastol	Intervention	Before	102,50	13.172	<0.001*
		After	90,00	10,501	
	Control	Before	107,00	10.972	0.002*
		After	96,00	9,234	

Analysis was carried out using paired sample t-test; *Significant value if p<0,05.

Table 2. Comparison of Perceived Stress Scale (PSS) scores between the two groups before and after intervention.

Group	No.	Before intervention	After intervention	t value	p-value
Control	15	11.2-2.7	10.5-2.4	1.107	0.175
Intervention	15	11.3-3.1	7.5-2.2	6.743	<0.001*
t value		0.145	5.181		
p-value		0.769	0.000		

Analysis was carried out using paired sample t-test; *Significant value if p<0,05.

Table 3. Comparison of Scale Pittsburg Sleep Quality Index (PSQI) scores between the two groups before and after intervention.

Group	No.	Before intervention	After intervention	t value	p-value
Control	15	21.0-2.3	20.5-2.4	1.205	0.185
Intervention	15	21.3-1.4	17.5-2.2	6.343	<0.001*
t value		0.653	7.181		
p-value		0.519	0.000		

Analysis was carried out using paired sample t-test; *Significant value if p<0,05.

about of perceptions, dialogs, work out books, journals, and disposition check-ins from members to see the advance of members some time recently, amid and after the treatment was given.

RESULTS

The study population consisted of 30 elder with all genders female. In this study, researchers will find out whether MBSR and samavritti pranayama have an effect on reducing blood pressure, anxiety, and sleep quality in the elderly with hypertension. First, we compared blood pressure between the control and intervention groups before and after the intervention.

The results showed significant difference between the two bunches some time recently the begin of the intercession. In rundown, these discoveries recommend that the combination of MBSR and samavritti pranayama successfully brings down blood weight within the elderly with hypertension.

At that point to test whether MBSR and samavritti pranayama had a restorative impact on mental side effects, we evaluated uneasiness scores some time recently and after the intercession. Uneasiness levels diminished essentially within the intercession gather (Table 2, t = 6.743, p = 0.000); be that as it may, no difference was watched within the control gather (Table 4, t = 1.107, p = 0.175). These comes about lead us to the conclusion that the combined MBSR and samavritti pranayama intercession can viably diminish uneasiness within the elderly with hypertension.

To advance demonstrate that the combination of MBSR and samavritti pranayama may be a valuable aide to non-pharmacological treatment of hypertension and mental issues (uneasiness), the center of this think about is sleep quality. Comparison of PSQI scores within the two bunches appeared that rest quality was incredibly moved forward after the mediation (Table 3, t = 6.343, p = 0.000). In differentiate, there was no factually critical alter within the control bunch some time recently and after the consider period (Table 3, t = 1.205, p = 0.185). In outline, these information give assist prove that MBSR combined with samavritti pranayama incorporates a useful impact on mental side effects among the elderly with hypertension.

DISCUSSION

Together with expanding age, a person's chance for creating hypertension increments. That's since the maturing prepare makes blood vessels thicken and solidify, so blood weight tends to be tall. In common, hypertension within the elderly is mostly treated therapeutically with drugs; Be that as it may, mental and physiological complications can lead to a really moo quality of life. Subsequently, in this ponder, we outlined an interventional explore to explore unused approach with the potential to lower blood weight and uneasiness and make strides quality of life within the elderly with hypertension. Compared with other illnesses, hypertension is more likely to cause uneasiness, rest issues, and other passionate responses. Based in some studies regarding effectiveness of pranayama as hypertension therapy have similar findings. Based on study by Ttryambake, 2013 found the people who received pranayama therapy for 10 days could lower the blood pressure (154.53/93.8 mmHg on day 1 vs 133.2/82.26 mmHg on day 10).[9] Similar finding was also found on study conducted by Sankar and Monisha, 2020. This study found that the intervention using pranayama could lower the blood pressure and heart rate of hypertension patients significantly (p<0,05).[10]

MBSR has the capacity to make strides patients' mental adjustment to ailment, in this manner diminishing uneasiness and rest unsettling influences. Yoga, at the side unwinding, biofeedback, supernatural reflection, and psychotherapy, have been found to have a consoling antihypertensive impact. In this ponder, we separated 30 elderly individuals with hypertension and isolated them into intercession bunch and control bunch to investigate the restorative impact of MBSR combined with samavritti pranayama in lessening mental and physiological complications. After an 8-week course of mental mediation, diminished blood weight, and uneasiness, rest quality scores made strides altogether. Developing studies have appeared that MBSR is successful for moving

forward quality of life and diminishing complications in a few infections. In addition, samavritti is one of the foremost essential shapes of pranayama. samavritti can be done nearly anyplace to decrease stretch and uneasiness decently rapidly. Taken together, these considers outline the benefits of MBSR and samavritti pranayama for diminish of clinical complications and progression of quality of life in patients, which unequivocally supports our conclusion.11 In the interim, our discoveries too bolster the conclusions of past investigate ponders and may broaden the extend of extra approaches to clinical treatment. We accept that these combined into a strategy may be an viable non-pharmacological intercession to move forward the quality of life not as it were within the elderly with hypertension, but too in other infections.

Numerous limitations of this study ought to be said. One, inalienable to the inquire about conditions within the communities in which the investigate was conducted, is the need of observational components, which ought to be explored in future investigate. Other restrictions incorporate the moderately little number of members. The most restriction, be that as it may, was the nonappearance of two extra control bunches. Numerous ponders have appeared that MBSR and samavritti pranayama are advantageous in decreasing hypertension and mental push as aides to restorative strategies, separately. The aim of our study was to explore the therapeutic effect of combining MBSR with samavritti pranayama on the reduction of these manifestations in hypertension. Therefore, two additional groups (MBSR intervention only and samavritti pranayama only intervention) and a larger number of participants should be included in future studies. Finally, only reductions in blood pressure, anxiety, and sleep quality were assessed, while the elderly with hypertension may experience other physiological and psychological complications. We suggest that further studies include additional indicators for evaluating patients' quality of life.

CONCLUSION

Results of this study indicate that the combined intervention of MBSR + Samavritti pranayama is very helpful in lowering blood pressure, anxiety, and sleep disorders in the elderly with hypertension. These findings provide evidence that MBSR combined with Samavritti pranayama may be effective for non-pharmacological interventions and aid in future clinical care. These findings need to be validated with more comprehensive study with larger sample size.

AUTHOR CONTRIBUTION

All authors similarly contribute to the think about from the investigate concepts, information acquisitions, information investigation, factual investigations, changing the paper, until detailing the consider comes about through publication.

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CONFLICT OF INTEREST

There is no conflict of interest for this manuscript.

ETHICAL CONSIDERATION

This research was approved by the Health Research Ethics Committee of University Nahdlatul Ulama. Letter of exemption Ref. No. 1993/EC.KEPK/UMS/2020.

REFERENCES

1. Singh S, Shankar R, Singh GP. Prevalence and Associated Risk Factors of Hypertension: A Cross-Sectional Study in Urban Varanasi. Int J Hypertens. 2017;2017.
2. Oparil S, Acelajado MC, Bakris GL, Berlowitz DR, Cífková R, Dominiczak AF, et al. Hypertension. Nat Rev Dis Prim. 2018;4.
3. Perhi. Konsensus Penatalaksanaan Hipertensi 2019. Jakarta: Perhimpunan Dokter Hipertensi Indonesia; 2019.
4. Kementerian Kesehatan Republik Indonesia. Riset Kesehatan Dasar (RISKESDAS) 2018. Jakarta; 2018.
5. Noventi I. The Relationship of Healthy Lifestyle Index (HLI) To The Occurrence Of Hypertension In Mountains, Coastal, And Urban Communities. Nurse And Health: Jurnal Keperawatan. 2019;18(2):140-152.
6. Siburian I. Gambaran Kejadian Hipertensi dan Faktor-faktor Yang Berhubungan Tahun 2001 (Analisis data sekunder SKRT 2001). Skripsi. Fakultas Kesehatan Masyarakat. Universitas Indonesia. Depok. 2001.
7. Kabat-Zinn J. Mindfulness based stress reduction for medical students: optimising student satisfaction and engagement. BMC Medical Education. 2016;16(1):1-11.
8. Santorelli S, Meleo-Meyer F, Koerbel L. Mindfulness-Based Stress Reduction (MBSR): Authorized curriculum guide. Worcester: University of Massachusetts Medical School. 2017.
9. Ttryambake RG. The Effectiveness of Pranayama on Blood Pressure of Hypertensive Patients. International Journal of Science and Research. 2013;4:438.
10. Sankar G and Monisha R. Effectiveness of Pranayama on Heart Rate and Blood Pressure in Hypertension (Stage I). J. Pharm. Sci. & Res. 2020;12(1):165-166.
11. Zaccaro A, Piarulli A, Laurino M, Garbella E, Menicucci D, Neri B, Gemignani A. How Breath-Control Can Change Your Life: A Systematic Review on Psycho-Physiological Correlates of Slow Breathing. Front Hum Neurosci. 2018;12:353.