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Research Article

Effect of Heartfulness Meditation on Vital Parameters among Experienced and New Meditators

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ABSTRACT
Background: Meditation has been key component of Eastern spiritual practices. Heartfulness meditation is a unique heart based system with key practices like cleaning and meditation aided by yogic transmission. Meditation includes a state of deep relaxation and calmness due to changes produced in pertinent areas of brain which improves the performance of brain and circulatory system.
Objectives: To analyze and compare the effect of 30-minute heartfulness meditation session on vital parameters of experienced and new meditators.
Methods: An observational study was conducted for a period of 1 month among experienced and new meditators at Heartfulness Training Center, Tirupati with an estimated sample size of 45 in each group (N=90). All the participants were selected by simple random sampling and were subjected for personal interview by using semi structured questionnaire. Anthropometric measurements and vital parameters like pulse rate, blood pressure were recorded. The difference between means was analyzed by using paired and unpaired t-test.
Results: Mean age of study participants was 56.7±13. Mean heart rate among experienced meditators was decreased from 82.0±8.8 to 80.3±9.9. The mean systolic blood pressure among experienced meditators and new meditators after meditation was found to be 128.1±17.2 and 121.5±12.8 respectively. Statistically significant difference was found in systolic blood pressure levels among both the groups.
Conclusion: Heartfulness meditation session was found to have favourable effect on vital parameters especially systolic blood pressure.

Keywords: Heartfulness meditation, Heart rate, Systolic blood pressure, Diastolic blood pressure.

INTRODUCTION

Meditation has been one of the key components of spiritual practices from ancient times. During recent years, it has been recognized as a systemic practice resulting in measurable psychophysiological effects on the body.[1,2] It is important to study specific meditation techniques which employ different procedures to achieve the desired state of mind. More over processes like cleaning, and meditation with yogic transmission are unique to heartfulness system, which makes it important to study the effect of these processes comprehensively.[3] Heartfulness meditation is a contemplative tradition with a global presence that enables practitioners to experience the transcendence of individual human consciousness with the use of few simple practices.[4]

Variations in blood pressure are normal due to life style changes such as exercise, diet, medication, stress and sleep quality. Persistent elevation of systolic pressure increases the risk of having significant cardiovascular problems such as stroke and heart diseases.[5]

Meditation induces a state of deep relaxation and calmness due to changes produced in pertinent areas of brain which improves the performance of brain and circulatory system. The heart pumps slowly and steadily which

reduces the possibility of overload and hence there is less likelihood of stress and fatigue.[6,7,8] The objectives of the study are to evaluate the impact and to compare effect of heartfulness meditation on vital parameters among experienced and new mediators

MATERIAL AND METHODS

This was an observational study conducted at Heartfulness training centre, Tirupati for a period of one month. Sample size was calculated based on a study done by Amarnath et.al at Chennai in 2017 [9] using the formula $N = Z^2\ 2S^2/\ d^2$ (Combined SD of systolic BP before & after meditation is 18.8 with mean difference (d) 5.9 at 95% CI). The sample size was 159 and with 5% non response rate, the sample size was 168. The estimated number of experienced meditators at the centre is 70. By applying finite correction, the adjusted sample size was 45 in each group which was found to be adequate.

All people who are willing to participate and are practicing heartfulness meditation regularly for more than 1 year and at least 1 hour per day were included in the experienced group. People who are beginners (less than 6 months) were included as new group. People who have taken medication for hypertension 12 hours before the session were excluded from the study.

The study was approved by Institutional Ethics Committee of Sri Venkateswara Medical College, Tirupati (Lr.No.06/2024, dt: 23/01/2024). After obtaining the necessary permission from the authorities of meditation centre, the purpose of the study was explained to all the meditators in the centre. Written informed consent was obtained from the study participants. A total of 90 participants were selected randomly with 45 subjects in each group, namely, experienced and beginners. All the study participants were subjected for personal interview with the help of a predesigned semi structured questionnaire. A 30 min heartfulness meditation session was conducted by a certified heartfulness trainer and the vital parameters were recorded at the beginning and again at the end of the session after one hour. The questionnaire consists of details regarding socio demographic profile and vital parameters.

The collected data was entered in Microsoft excel 2019 and analyzed using Epi info version 7.2.5 by WHO, CDC, Atlanta. All categorical variables were presented as frequency and percentages and continuous variables were presented as mean and SD. Paired t test and student t test was used to find difference in means of paired measurements and independent groups respectively. A p-value less than 0.05 was considered as statistically significant.

RESULTS

Out of 90 participants, 45 were experienced and 45 were new meditators. Among experienced group, 22 (47.8%) were females and 23 (52.3%) were males. Among new meditators group, 24 (52.2%) were females and 21 (52.2%) were males. It is observed that mean age of experienced and new meditators was 58.4±11.6 years and 54.9±14 years respectively. The mean BMI of experienced and new meditators was 26.6±3.23 Kg/m^2 and 25.9±4.67 Kg/m^2. (Table 1)

Baseline parameters were analysed and the mean heart rate among experienced and new group was found to be 82±8.8 and 80.3±9.9 respectively. The mean SBP among experienced group and new group was 131.5±17.3 and 125.8±14.2 respectively. The mean DBP among experienced group and new group was 81.8±10.2 and 79.2±7.21 respectively. All these differences were not found to be statistically significant (Table 2).

There was a slight decline in the mean heart rate after meditation in both the groups. There was significant reduction of mean SBP after meditation but there was no change in mean DBP after meditation among experienced and new meditators (Table 3).

Table 1. General Characteristics of the Study Participants:

Variable	**Experienced** Mean±SD	**New** Mean±SD	**t value**	**p value**
Age	58.4±11.6	54.9±14.1	1.301	0.197
BMI	26.6±3.23	25.9±4.67	0.860	0.392

Table 2. Baseline Heart Rate and Blood Pressure of Experienced and New Meditators

Baseline parameters	**Experienced** Mean±SD	**New** Mean±SD	**t value**	**p value**
Heart rate	82±8.8	80.3±9.9	0.852	0.396
Systolic BP	131.5±17.3	125.8±14.2	1.716	0.095
Diastolic BP	81.8±10.2	79.2±7.21	1.387	0.169

Table 3. Comparison of vital parameters before and after a 30 minute meditation session within the group.

Group	**Variables**	**Before meditation** Mean±SD	**After meditation** Mean±SD	**t value**	**p value**
Experienced Meditators	Heart rate	82.0±8.8	81.4±8.1	0.93	0.36
	Systolic BP	131.5±17.3	128.1±17.2	2.27	0.03*
	Diastolic BP	81.8±10.2	81.9±9.4	0.14	0.88
New meditators	Heart rate	80.3±9.9	80.1±9.3	0.40	0.68
	Systolic BP	125.8±14.2	121.5±12.8	3.98	0.001*
	Diastolic BP	79.2±7.21	79.2±6.28	0.19	0.91

DISCUSSION

In this study, mean heart rate at baseline is 82±8.8 in experienced meditators and 80.3±9.9 in new meditators. In a study conducted by amaranth et.al, the mean heart rate at baseline was nearly same in both the experienced and new meditators i.e 83.1 and 83.2 respectively. This might be due to the fact that in our study majority of the members in experienced group are of higher age group, there will be resistance to the flow of blood in the blood vessels due to the ageing effect. However, after a 30-minute heartfulness meditation session, heart rate is considerably reduced in both populations. These findings suggest that Heartfulness Meditation may have a beneficial impact on the regulation of vital parameters, with potential implications for improving overall cardiovascular health and stress management.

In the present study, the SBP among experienced and new meditators before the starting of heartfulness meditation was 131.5±17.3 and 125.8±14.2 respectively. After meditation session it was reduced to 128.1±17.2 and 121.5±12.8. Similar decrease in the blood pressures were observed in a study conducted by Haripriya et.al, with the systolic BP before and after meditation being 133.4±10.8 and 123.6±5.8 respectively. Sympathetic drive is directly correlated with heart rate and blood pressure. This study is distinctive, though, in that it focuses exclusively on Heartfulness Meditation, which blends aspects of conventional meditation with an emphasis on inner peace and heart-centered awareness. This observation is similar to the results observed in previous studies [10-12]. Heart rate is regulated by the relaxation response that meditation creates, which modifies sympathetic and parasympathetic activities. When compared to resting heart rates, meditation significantly lowers heart rates.[7]

Anxiety, stress, obesity, cardiovascular, renal, metabolic, and other conditions characterized by elevated central sympathetic activity are linked to elevated heart rates. In a study conducted by Pujitha Kunati et.al, on stress among medical students it was observed that the SBP before and after meditation was 116.1±3.4 and 112.3±3.3 and DBP was 76.8±3.1 and 72±2.8 respectively. A lower heart rate may indicate less stress. The heart is more efficient when it beats more slowly because it pumps more blood with each beat. An infarction is less likely to occur in an efficient heart since it is under less strain.[13]

Frequent meditation helps healthy people maintain a balanced lifestyle and control their breathing. This is reflected by the fact that the systolic and diastolic BP are lower in both experienced meditators and new meditators after a meditation session. In a study

conducted by Haripriya et.al, there was decrease in DBP from 73.4±9.2 to 69.2±5.2. In our study there was no significant difference in DBP in both the groups. Compared to seasoned meditators, novices who have never meditated before typically suffer extremely high levels of tension and anxiety. Additionally, it increases tolerance to physical activity and fosters serenity, which enhances an individual's overall wellbeing.[14] Regular practice of meditation optimizes the working of autonomic nervous system.. A single session of meditation on an optimized autonomic nervous system will show only a marginal benefit. Regular meditators would have already benefitted from meditation and developed optimization of the autonomic nervous system. Even though the short meditation session reduced systolic BP; it could also achieve statistical significance. Like previous studies, our study also shows that meditation lowers blood pressure by nearly 3 - 4 millimetres of mercury.[15]

The health benefits of meditation can differ from person to person. Meditation has been shown to have a regulating effect on the autonomic nervous system by lowering stress and physiological arousal.[15] Meditation examines the fundamental physiological alterations brought on by the relaxation response, such as a reduction in sympathetic nervous system activity. Frequent meditation practice prevents stress hormones from affecting the body and brain. Feelings of increased control over one's life might result from consistent meditation practice. Regular practice has both psychological and physical benefits, particularly under stressful circumstances.

Limitations

Small sample size may impact the generalizability of the study findings. The cross-sectional study design restricts the capacity to draw conclusions about causality. Long-term impact of heartfulness meditation on general health would come from longitudinal studies that follow people over time.

CONCLUSION

This study offers proof that Heartfulness Meditation significantly affects vital signs like blood pressure in both new and experienced meditators. The findings imply that even inexperienced practitioners can benefit from Heartfulness Meditation by experiencing favorable physiological changes. This demonstrates the promise of heartfulness meditation as an approachable and successful technique for enhancing physical health and lowering stress. There is a need for further research in order to find the impact of heartfulness meditation on cardiovascular health.

Conflict of Interest: Nil
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