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Effectiveness of 12 weeks of listening to Gayatri Mantra in the management of non-motor symptoms in patients with Parkinson's disease: A pilot study

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ABSTRACT

Background: Parkinson's patients experience non-motor symptoms along with motor symptoms that include autonomic deregulation, insomnia, decline in cognition, and psychological distress. Although it is known that mantra chanting offers multiple beneficial effects, the scientific studies related to these are limited. **Aims and Objectives:** The present study aimed to observe the effectiveness of listening to the Gayatri Mantra in managing non-motor symptoms in patients with Parkinson's disease. **Materials and Methods:** The present pilot study recruited 20 patients with Parkinson's disease. The patients acted as self-controls. After recording the baseline values, the participants were asked to listen to the Gayatri Mantra 108 chanting twice a day for 12 weeks. After 12 weeks of listening, post-intervention values were recorded and analyzed. Sleep quality was assessed using the insomnia severity index. Stress levels were assessed using the perceived stress scale. Spatial and verbal memory tests were used to assess the memory scores. Blood pressure was recorded using the Diamond Original Mercurial Regular BP Monitor (Multicolor). The pulse rate was recorded manually in the radial artery. **Results:** There was a significant decrease in the perceived stress scores followed by the intervention ($P<0.01$). Sleep quality was improved in the participants followed by listening to the Gayatri Mantra chanting. There was an improvement in the spatial and verbal memory scores. Systolic and diastolic pressure was decreased and remained within normal limits followed by the intervention. The pulse rate was significantly decreased followed by the intervention. **Conclusion:** The study results provide preliminary evidence that listening to the Gayatri Mantra has positive effects on the management of the non-motor symptoms of Parkinson's disease patients. However, there is a need for more studies with higher sample sizes to recommend the implementation of the Gayatri Mantra in the management of Parkinson's disease.

Key words: Parkinson's disease; Non-pharmacological treatment; Gayatri Mantra; Non-motor symptoms

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INTRODUCTION

Parkinson's disease is a progressive neurodegenerative disease that has limited treatment options. Motor symptoms are well noted in these patients including both hyperkinetic and hypokinetic effects. At the same time, these patients also experience non-motor symptoms that include autonomic deregulation, insomnia, decline in cognition,

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and psychological distress. Hence, it is recommended to assess the non-motor symptoms also in these patients and manage the non-motor symptoms also along with the motor symptoms. This will help the prognosis of the treatment and overall improvement of their quality of life.[1] Non-pharmacological therapies are recommended in the management of Parkinson's disease.[2] Mental health plays a crucial role in the management of the neurological disorders. Religious mantras listening and chanting were reported to have immense benefits provided practicing them for long periods of time. Mantra listening has been used in clinical practice to manage psychological stress.[3] Gayatri Mantra is believed to be very sacred and listening or chanting of Gayatri Mantra ensures a stable emotional state and improves the quality of life.[4] Significant improvements in cognitive functions are reported followed by chanting of the Gayatri Mantra chanting.[4] The Gayatri Mantra was mentioned in the Vedas and practiced from decades in Indian tradition. Listening to Gayatri Mantra was reported to cause psycho-physiological changes in the individuals.[5] Although it is known that there are multiple beneficial effects offered by mantra chanting, the scientific studies related to these are limited. Hence, the present study was undertaken.

Aims and objectives

The present study was undertaken to observe the effectiveness of listening to the Gayatri Mantra in managing non-motor symptoms in patients with Parkinson's disease.

MATERIALS AND METHODS

The present study was an experimental study and the study protocol was approved by the institutional human ethical committee (IEC-20-190-8). The present study recruited 20 patients with Parkinson's disease, who acted as self-controls. As this is a pilot study, we have recruited a few subjects to know the effectiveness. Followed by this study, we will be conducting a study with a large population involving multiple centers. Patients diagnosed with Parkinson's disease within 2 years, both male and female participants within the age group of 30–80 years were part of the study. Patients with any severe complications were excluded from the study. A general physical examination was conducted on all the patients before the study. All the patients remained on the same medications, diet, and lifestyle during the study period that they were using before the study. After recording the baseline values, the participants were asked to listen to the Gayatri Mantra 108 chanting twice a day for 12 weeks. Gayatri Mantra chanted 108 times by Shri. Shankar Mahadevan's audio was distributed to the patients to listen to twice a day in the morning and evening at their convenience time. The listening time for one 108-chanting session is 7 min. A WhatsApp group with the participant and their family member was created to monitor and ensure that every day they are listening to the Gayatri Mantra. After 12 weeks of listening, post-intervention values were recorded and analyzed. Sleep quality was assessed using the insomnia severity index.[5] Stress levels were assessed using the perceived stress scale.[6] Spatial and verbal memory test was used to assess the memory scores.[7] Blood pressure was recorded using the Diamond Original Mercurial Regular BP Monitor (Multicolor). The pulse rate was recorded manually in the radial artery. All the parameters were recorded at 10 am for the convenience of the participants and also to avoid diurnal variations. Data were analyzed using the SPSS 20.0 version. Student's t-test was applied to observe the significance of the difference between the groups. A probability value of <0.05 was considered significant.

RESULTS

Table 1 presents the demographic data of the participants. Table 2 presents the psychological, cognitive parameters, and sleep quality scores of the participants before and after the intervention. There was a significant decrease in the perceived stress scores followed by the intervention ($P<0.01$). Sleep quality was improved in the participants followed by listening to the Gayatri Mantra chanting. However, this was not statistically significant. There was an improvement in the spatial and verbal memory scores. However, this improvement is not statistically significant. Table 3 presents the blood pressure and pulse rate of the participants before and after the intervention. Systolic and diastolic pressure was decreased and remained within normal limits followed by the intervention. However, this decrease is not statistically significant. The pulse rate was significantly decreased followed by the intervention.

DISCUSSION

The present study was undertaken to observe the effectiveness of listening to the Gayatri Mantra in managing non-motor symptoms in patients with Parkinson's disease. There was a significant decrease in the perceived stress scores followed by the intervention ($P<0.01$). Sleep quality was improved in the participants followed by listening

Table 1: Demographic data of the participants

Parameter	Mean±SD
Age (years)	58.71±8.06
Height (cm)	167.44±6.88
Weight (kg)	71.22±10.51

Data were presented as mean and SD

Table 2: Psychological, cognitive parameters, sleep quality scores in the participants before and after intervention

Parameter	Pre-intervention score	Post-intervention score	P-value
Perceived stress	17±1.80	14.44±1.88	0.0095**
ISI score	15.33±2.87	17.89±2.57	0.0641
Spatial memory score	4.38±1.41	4.94±0.83	0.1659
Verbal memory score	2.80±0.94	2.60±0.91	0.5589

Data were presented as mean and SD. (**P<0.01 is significant). ISI: Insomnia severity index

Table 3: Blood pressure and pulse rate in the participants before and after intervention

Parameter	Pre-intervention score	Post-intervention score	P-value
SBP (mmHg)	125±12.31	117.87±14.67	0.1903
DBP (mmHg)	78.50±9.15	73.83±6.29	0.1596
Pulse rate (per min)	81.38±6.95	72±6.27	0.0014**

Data were presented as mean and SD. (**P<0.01 is significant). SBP: Systolic blood pressure, DBP: Diastolic blood pressure

to the Gayatri Mantra chanting. However, this was not statistically significant. There was an improvement in the spatial and verbal memory scores. However, this improvement is not statistically significant. Systolic and diastolic pressure was decreased and remained within normal limits followed by the intervention. However, this decrease is not statistically significant. The pulse rate was significantly decreased followed by the intervention. Indian culture is very sacred and the rituals mentioned in the culture are nothing but a healthy lifestyle. An earlier study reported that attending a Hawan helps to manage epilepsy. Mahamrityunjaya mantra starts with "sughandhim puushtivardhanam" which means a good fragrance can improve the health of an individual. Mantra chanting and listening have immense importance in Hindu tradition.[8] A study compared between chanting effects of the Gayatri Mantra and a poem on cognitive functions and it was testified that the Gayatri Mantra offers improvement in the performance of the digit-letter substitution task.[9] In Indian tradition, it was mentioned that the Gayatri Mantra was mentioned in Rigveda, and at the beginning of education this mantra was preached to the student from the teachers. Practicing the Gayatri Mantra was reported to improve cognitive functions.[8] Bheeja Aksharas were incorporated into these mantras. Chanting or listening to these mantras activates certain brain areas and offers relaxation to the individual. Interestingly, it was reported that improvement in the baroreceptor sensitivity was observed followed by the mantra chanting.[9,10] Another study reported activation of the prefrontal cortex followed by mantra chanting.[9] Deactivation of most of the limbic structures was reported followed by listening to "OM." These structures include the amygdala, hippocampus, prefrontal cortex, etc.[9] It was reported that chanting or listening to the mantras improves attention and intelligence.[6,10-14] The mental state was reported to be altered by listening to Gayatri Mantra.[15] Reduction in the stress scores were reported followed by Gayatri Mantra chanting by earlier studies.[16,17] Significant reductions in the anger scores were observed in the participants practicing Gayatri Mantra chanting.[18] Magnetic resonance imaging studies reported activation of the insula, and temporal gyri was reported followed by the mantra chanting.[4] Further the Gayatri Mantra is preceded by the syllable OM which is well known to offer calming effects and regulate multiple body functions.[19]

Hence, all these studies testify to the beneficial effects of chanting or listening to the mantras offer relaxation as well as improve cognitive functions. The same was observed in the study. There was a significant reduction in stress scores. There was an improvement in the spatial and verbal memory scores but not significant. This may be due to the duration of the study. Increasing the duration of listening to the mantra may cause a significant difference. The study results provide preliminary evidence that listening to the Gayatri Mantra has positive effects on the management of the non-motor symptoms of Parkinson's disease patients. However, there is a need for more studies with higher sample sizes to recommend the implementation of the Gayatri Mantra in the management of Parkinson's disease.

Limitations of the study

As the study is preliminary, the sample size is less. Hence, the results may not be generalized. The duration of the study might be a little longer to see the significant difference in pre-intervention and post-intervention values.

CONCLUSION

The study results provide preliminary evidence that listening to the Gayatri Mantra has positive effects on the management of the non-motor symptoms of Parkinson's disease patients. However, there is a need for more studies with higher sample sizes to recommend the implementation

of the Gayatri Mantra in the management of Parkinson's disease.

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Authors' Contribution:
PN- Design of the study, review of literature, analysis, and preparing the manuscript; **MJK, NRG**- Data collection and preparing the manuscript; **AMRS, SSKG**- Analysis and preparing the manuscript.

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