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HEARTFULNESS MEDITATION AS A COMPLEMENTARY THERAPY FOR GLYCEMIC CONTROL IN ADULTS

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ABSTRACT

Background: Heartfulness Meditation presents a supportive, holistic approach to assist adults in managing glycaemic levels, improving quality of life, and potentially enhancing the effectiveness of standard diabetes care. In countries like India, rural diabetes prevalence is around 8% to 12%. Objective: To assess the effectiveness of heartfulness meditation on random blood sugar among adults in rural areas. Methods: A randomized controlled trial with 139 healthy adults from rural areas were recruited into the study and control groups. The intervention was carried out for 12 months with every 3 months of follow-up. Participants from both groups were analyzed for random blood sugar level by using a glucometer before and after the intervention. Results: The study shows that the comparisons of the mean score of random blood sugar before and after intervention indicate a significant difference in the study group, as $p < 0.0001$ at post-intervention 3, 6, 9, and 12 months, whereas the control group shows a non-significant difference. Conclusion: Heartfulness meditation, when practiced consistently, can effectively manage blood sugar levels in adults, potentially serving as a complementary approach to traditional medical treatments.

Keywords: Heartfulness Meditation, Complementary Therapy, Glycemic Control, Adults

INTRODUCTION

Meditation is a mind-body practice that promotes relaxation, mental clarity, and emotional balance, and has gained attention as a complementary therapy for managing diabetes mellitus.1 It is a low-cost, low-risk intervention that can be easily incorporated into daily routines and is best used alongside conventional diabetes treatments such as medication, diet, and exercise.2 Heartfulness Meditation, a heart-centered practice focusing on relaxation, inner balance, and emotional well-being, may serve as a beneficial complementary therapy for adults managing glycaemic control, particularly those with diabetes or prediabetes.3 It involves relaxation, meditation, cleaning, and inner connection. Recent studies have shown that regular practice may lead to improvements in mental health, emotional stability, and physiological parameters.4 In India, the prevalence of diabetes mellitus in rural areas has been rising due to a shift in lifestyle and dietary habits. The International Diabetes Federation estimates that approximately 537 million adults (aged 20-79) were living with diabetes worldwide in 2021, with projections indicating that this number will rise to 643 million by 2030 and 783 million by 2045.4,5 Heartfulness Meditation can lower stress levels, which in turn can help reduce cortisol production, which is associated with increased blood sugar levels.

NEED OF THE STUDY

Heartfulness meditation can improve emotional stability, reduce anxiety and depression, and improve metabolic health. It encourages healthier habits like improved diet and exercise, which are crucial for managing diabetes. Meditation also improves sleep, which is essential for maintaining healthy blood sugar levels.6 Previous studies on heartfulness meditation have often focused on anecdotal evidence, small sample sizes, subjective well-being, and short-term effects. The present study uses a larger, more diverse sample size and a randomized controlled trial design to explore the long-term effects of regular practice and investigates understudied populations or contexts, such as specific age groups or cultural backgrounds in rural areas.

Aim of the Study: To evaluate the effectiveness of Heartfulness meditation on random blood sugar among adults in rural areas.

Problem Statement: Effect of Heartfulness Meditation on random blood sugar among adults residing in rural areas.

Objectives of the study: To compare the random blood sugar of adults in the study and control group before and after heartfulness meditation

Hypotheses:

H01: There is no significant difference in random blood sugar among adults in study and control group before and after heartfulness meditation.

H1: There is significant difference in random blood sugar among adults in study and control group before and after heartfulness meditation.

MATERIALS AND METHODS:

Study design and setting: A quantitative approach with a randomized controlled trial was used for conducting the study in 2 rural community villages named Velapur and Shahajapur in Ahmednagar district over a period of 12 months.

Study population and sampling: The population comprised the residents between the ages of 30 and 60 years by simple random sampling by the lottery method. We calculated the sample size using the previous mean and SD. We added a 20% attrition rate, resulting in a final sample size of 154.The samples who were willing to participate by signing the written informed consent and were able to read and understand Marathi/Hindi were included in the study.

Data collection procedure: After the Institutional Ethical Review Committee with letter No. MGMIHS/R&D/ECRHS/07/2023/183 dated 30/07/2023 was taken, permission was obtained from the Sarpanch of both villages. Written informed consent was signed for every sample after the researcher explained the study purpose. The study ensured voluntary participation, as the participants had the right to decline participation or to withdraw from the study at any time if they so desired with no penalties or loss of benefit. The data was collected using mainly two parts. The first part included sociodemographic characteristics such as gender, age, education, and occupation, and the second part included random blood sugar measured by a glucometer before and after the intervention in the study and control groups. The obtained scores were graded using the statistical scoring method. The tool was translated into regional languages like Marathi and Hindi and retranslated for assessing its validity.

DATA ANALYSIS AND INTERPRETATION OF RESULTS: The raw data of the study was coded and analysed using IBM SPSS version 25.0. The demographic was presented as frequency and percentage depicted in table No1.

Table No 1: Distribution of Samples based on demographic Variables among study and control group

n=154

Demographic Data		**Study Group (n=77)**		**Control Group (n=77)**	
		f	**%**	**f**	**%**
Age in years	30-40	24	31	25	33
	40-50	30	39	32	42
	50-60	23	30	20	25
Gender	Male	45	58	42	54
	Female	32	42	35	46
Educational Qualification	No formal education	10	11	10	11
	Primary	15	19	16	20
	Secondary	16	20	15	19
	Higher secondary	21	28	18	28
	Graduate	10	13	10	13
	Post graduate & above	5	7	7	9
Occupation	Daily Wages	20	26	22	28
	Home Maker	17	22	15	20
	Farmer	14	18	15	20
	Business	8	11	12	15
	Private employee	6	7	5	7
	Government employee	5	6	4	5
	Others	7	10	4	5
Type of family	Nuclear Family	26	33	30	38
	Joint &extended family	41	54	38	50
	Living alone	10	13	9	12

As exhibited in Table No.1, the majority of the samples were between the ages of 40 and 50 years, with a mean age of 44.87 years. It was observed that 58% were male, with 28% having completed higher secondary education. Most of them were daily wages (26%). Even though 54% of study samples belonged to joint and extended families

Table No 2: Comparison of Mean & SD of RBS of different interventions in study group and control group (Repeated ANOVA)

n=139

Random Blood Sugar	**Mean±SD**	**F-value**	**p-value**

Study Group (n=70)	Pre-Intervention	177.31±55.28	148.39	P<0.0001(S)
	Post-Intervention 3 Months	176.21±52.30		
	Post -Intervention 6 Months	174.12±52.08		
	Post -Intervention 9 Months	172.22±51.21		
	Post -Intervention 12 Months	170.01±50.29		
Control Group (n=69)	Pre -Intervention	177.98±53.96	3.45	P=0.279(NS)
	Post-Intervention 3 Months	177.35±52.39		
	Post -Intervention 6 Months	176.55±52.22		
	Post -Intervention 9 Months	176.45±51.02		
	Post-Intervention 12 Months	175.50±51.49		

S: Significant, NS: Not Significant

The above table illustrates that the comparisons of the mean score of random blood sugar before and after intervention indicate a significant difference in the study group as p<0.0001 at post-intervention 3, 6, 9, and 12 months, whereas the control group shows a non-significant difference.

Table No 3: Comparison of Mean & SD of RBSL between study group and control group (Unpaired t- test)

n=139

Random Blood Sugar	**Study Group Mean±SD**	**Control Group Mean±SD**	**t-value**	**p-value**
Pre -Intervention	177.31±55.28	177.98±53.96	0.923	P=0.806(N)
Post -Intervention 3 Months	176.21±52.30	177.30±52.39	0.935	P=0.795(NS)
Post-Intervention 6 Months	174.12±52.08	176.55±52.22	1.98	P=0.032(S)
Post -Intervention 9 Months	172.22±51.21	176.45±51.02	4.94	P<0.0001(S)
Post -Intervention 12 Months	170.01±50.29	176.50±51.49	6.20	P<0.0001(S)

S: Significant, NS: Not Significant

According to the data in the table above, there was a statistically significant difference between the study group and the control group at 6, 9, and 12 months post-intervention when comparing the means and standard deviations of random blood sugar levels. The results show that at 6,9, and 12 months, the random blood sugar drops when adults practice heartfulness meditation.

Table No 4: Comparison of Mean difference of RBS in study group and control group (Z test)

n=139

Random Blood Sugar	Study Group		Control Group	
	Mean Difference	**p-value**	**Mean Difference**	**p-value**
Pre -Intervention Vs Post-Intervention 3 Months	1.10	P=0.291$^{(NS)}$	0.68	P=0.721$^{(NS)}$
Pre -Intervention Vs Post-Intervention 6 Months	3.19	P=0.025$^{(S)}$	1.43	P=0.502$^{(N)}$
Pre -Intervention Vs Post -Intervention 9 Months	5.09	P=0.001$^{(S)}$	1.53	P=0.319$^{(NS)}$
Pre -Intervention Vs Post-Intervention 12 Months	7.30	P<0.0001$^{(S)}$	1.48	P=0.257$^{(NS)}$

S: Significant, NS: Not Significant

The table indicates that the mean differences in random blood sugar levels before and after the intervention reveal a significant reduction in the study group at the 6, 9, and 12-month marks. Conversely, the control group demonstrated no significant changes. This suggests that heartfulness meditation effectively reduces random blood sugar levels over time, with measurable effects observed at 6, 9, and 12 months post-intervention.

DISCUSSION

The present findings demonstrate a significant reduction in Random Blood Sugar (RBS) from 177 mg/dl to 170 mg/dl after 12 months of consistent Heartfulness meditation practice. This improvement supports the growing body of evidence that mind-body interventions can positively influence glycaemic control in individuals with elevated blood glucose levels. The physiological mechanisms underlying this effect likely involve stress reduction, which modulates the hypothalamic-pituitary-adrenal (HPA) axis and decreases cortisol secretion, thereby enhancing insulin sensitivity (Bhasin et al., 2013).36 Additionally, Heartfulness meditation may improve autonomic nervous system balance by increasing parasympathetic tone and reducing sympathetic over activity, factors known to influence glucose metabolism (Pal et al., 2014).37These findings are consistent with studies indicating that meditation and mindfulness-based practices can lead to modest but clinically relevant decreases in blood glucose parameters among individuals with diabetes or prediabetes (Kumar et al., 2015).38 While the observed reduction in RBS is modest, its maintenance over a prolonged period suggests that regular Heartfulness meditation can serve as a valuable adjunct to conventional diabetes management strategies. The significant decrease in Random Blood Sugar (RBS) from 177 mg/dl to 170 mg/dl following 12 months of Heartfulness meditation aligns with findings from other meditation-based interventions targeting glycaemic control. For instance, a study by Rosenzweig et al. (2007)39 reported that mindfulness-based stress reduction (MBSR) led to significant improvements in glycaemic parameters and psychological well-being in patients with type 2 diabetes. The benefits are thought to arise from reductions in stress-induced hyperglycaemia mediated by decreased cortisol levels and improved autonomic function,

which enhances insulin sensitivity and glucose utilization. Similarly, a randomized controlled trial by Hegde et al. (2011)40 demonstrated that yoga and meditation practices contributed to improved fasting blood glucose and HbA1c levels in individuals with type 2 diabetes, suggesting that mind-body therapies can be effective adjuncts to conventional diabetes management. Future research with larger sample sizes and controlled designs will help clarify the extent of these benefits and the potential mechanisms involved. Nonetheless, this study adds to the evidence base supporting meditation as a complementary approach to improve metabolic health outcomes.

CONCLUSION

The study evaluated the effectiveness of Heartfulness Meditation on random blood sugar among adults in rural areas. Results showed a significant difference in blood sugar after a 12-month period. However, most rural communities are unaware of these practices, which can protect them from major co-morbidities. Heartfulness meditation is a beneficial non-pharmacological intervention for reducing blood sugar. Heartfulness meditation demonstrates a positive effect on blood sugar regulation by promoting relaxation, reducing stress, and improving overall mental well-being. These benefits contribute to better glycaemic control in individuals with elevated blood sugar or diabetes. Incorporating Heartfulness practices as a complementary approach alongside conventional medical treatment may enhance metabolic health and support long-term blood sugar management. Future research should explore larger randomized studies to measure its efficacy and address late-life issues. Future research should explore larger randomized studies to measure the efficacy of Heartfulness Meditation and address late-life issues. Future research should explore larger randomized studies to measure the efficacy of Heartfulness Meditation and address late-life issues related to blood sugar reduction.

Consent Form: The authors certified that they have obtained all appropriate participant consent forms before conducting the study. All participants were made to understand that their names were not published and due efforts were made to conceal their identity and the anonymity was guaranteed.

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