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Evaluation of the Effect of Mantra Chanting on Glycated Hemoglobin (HbA1c) Levels among Corporate Personnel: A Pre–Post Experimental Study

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Abstract: *Background: Occupational stress and sedentary work patterns among corporate personnel contribute to impaired glycemic control and increased risk of metabolic disorders. Glycated hemoglobin (HbA1c) is a reliable indicator of long-term glycemic regulation. Yogic practices such as mantra chanting are believed to reduce stress and improve autonomic balance, which may positively influence glycemic outcomes.*
Aim: To evaluate the effect of mantra chanting on HbA1c levels among corporate personnel.
Materials and Methods: A single-group pre–post experimental design was adopted. One hundred corporate employees participated in a structured mantra chanting intervention. HbA1c levels were measured before and after the intervention using standardized laboratory procedures. Pre- and post-test values were compared using paired t-test.
Results: Mean HbA1c levels decreased significantly from 5.87 ± 1.31% at baseline to 5.29 ± 0.80% post-intervention. The mean reduction of 0.58% was statistically significant ($t = 8.392$, $df = 99$, $p = 0.01$).
Conclusion: Mantra chanting produced a statistically significant reduction in HbA1c levels among corporate personnel. Regular practice of mantra chanting may serve as a supportive lifestyle intervention for improving glycemic regulation in occupational settings..

Keywords: Mantra chanting, HbA1c, glycemic control, corporate personnel, yoga

I. INTRODUCTION

The prevalence of impaired glycemic control and prediabetes is increasing globally, particularly among working adults exposed to sedentary lifestyles and chronic occupational stress(Kakkar et al., 2025; Kakkar S et al., 2025; Thombre et al., 1992). Corporate personnel are especially vulnerable due to prolonged sitting, irregular meal patterns, time constraints, and persistent psychological stress. These factors contribute to metabolic dysregulation, insulin resistance, and elevated glycated hemoglobin (HbA1c) levels(Chaudhary et al., 2024; Kakkar et al., 2024; Shah et al., 2024).

HbA1c reflects average blood glucose concentrations over a period of approximately three months and is widely used as a diagnostic and prognostic marker for diabetes and prediabetes. Emerging evidence indicates that glycemic regulation is influenced not only by diet and physical activity but also by psychological stress, autonomic imbalance, and neuroendocrine dysregulation(Jayawardena et al., 2020; Kr Sharma et al., 2011; Serra et al., 2017). Chronic activation of the hypothalamic–pituitary–adrenal axis leads to elevated cortisol levels, which promote insulin resistance and increased hepatic glucose output, thereby raising HbA1c levels.

Yoga-based mind–body interventions have gained increasing attention as adjunctive strategies for metabolic health. Mantra chanting is a sound-based yogic practice involving rhythmic repetition of sacred syllables combined with focused attention and controlled breathing(Mehta et al., 2015; Thakar et al., n.d.; Thomson et al., 2019). Traditional yogic texts describe mantra chanting as a practice that stabilizes mental fluctuations and harmonizes physiological processes. Scientific studies suggest that mantra chanting reduces stress, improves autonomic balance, and lowers

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resting heart rate, all of which are closely linked to glycemic regulation(Albano et al., 2022; Lee et al., 2021; Tamal Chakraborty, n.d.).

Despite growing interest in yoga-based interventions for metabolic health, empirical studies examining the effect of mantra chanting on HbA1c levels, particularly in occupational populations, remain limited. Therefore, the present study was undertaken to evaluate the effect of mantra chanting on HbA1c levels among corporate personnel using a pre–post experimental design(Cohen et al., 1983; Henry & Crawford, 2005; Jones et al., n.d.).

II. MATERIALS AND METHODS

Study Design

A single-group pre–post experimental research design was adopted.

Participants

A total of **100 corporate employees** were recruited using purposive sampling. Participants who were willing to participate and not engaged in regular yoga or meditation practices were included. Individuals diagnosed with diabetes requiring insulin therapy or with major medical conditions were excluded.

Ethical Considerations

Written informed consent was obtained from all participants prior to data collection. Confidentiality and voluntary participation were ensured throughout the study.

Intervention Protocol

Participants underwent a structured mantra chanting intervention for the duration specified in the thesis. Each session included preparatory relaxation, guided mantra chanting, and a brief period of silent sitting. Sessions were conducted in a calm environment to facilitate mental relaxation.

Assessment of HbA1c

HbA1c levels were measured before and after the intervention using standardized laboratory techniques. Blood samples were collected under similar conditions for both assessments to ensure reliability.

Statistical Analysis

Descriptive statistics (mean, standard deviation, standard error) were calculated. Paired *t*-test was applied to compare pre- and post-intervention HbA1c levels. Statistical significance was set at $p < 0.05$.

III. RESULTS

Effect of Mantra Chanting on HbA1c Levels

The pre- and post-intervention HbA1c values are presented in Table 1. At baseline, the mean HbA1c level of participants was **5.87 ± 1.31%**, indicating borderline glycemic dysregulation in the study population. Following the mantra chanting intervention, the mean HbA1c level decreased to **5.29 ± 0.80%**.

Paired *t*-test analysis revealed a **mean reduction of 0.58%** in HbA1c levels. This reduction was found to be **statistically significant** ($t = 8.392$, $df = 99$, $p = 0.01$). The confidence interval of the mean difference (0.44–0.71) further supports the reliability of the observed change.

Table 1: Effect of Mantra Chanting on HbA1c Levels among Corporate Personnel (n = 100)

Parameter	Mean ± SD	Std. Error Mean	*t* value	*df*	*p* value
HbA1c Pre-test (%)	5.87 ± 1.31	0.13			
HbA1c Post-test (%)	5.29 ± 0.80	0.08	8.392	99	0.01*

*Significant at 0.01 level

IV. DISCUSSION

The present study evaluated the effect of mantra chanting on glycated hemoglobin (HbA1c) levels among corporate personnel using a single-group pre–post experimental design. The findings revealed a statistically significant reduction in HbA1c levels following the intervention, indicating an improvement in long-term glycemic regulation. The observed

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decrease from **5.87 ± 1.31%** at baseline to **5.29 ± 0.80%** post-intervention represents a meaningful metabolic improvement in a population exposed to occupational stress and sedentary work patterns.

HbA1c is a robust marker of average blood glucose levels over a period of approximately three months and is strongly influenced by neuroendocrine and autonomic factors in addition to lifestyle behaviors. Corporate personnel are particularly vulnerable to stress-induced metabolic dysregulation due to chronic psychological stress, irregular routines, and reduced physical activity. Persistent activation of the hypothalamic–pituitary–adrenal (HPA) axis leads to elevated cortisol levels, which promote insulin resistance and increased hepatic glucose output, thereby contributing to elevated HbA1c levels.

The significant reduction in HbA1c observed in the present study may be attributed to the stress-modulating and autonomic-regulating effects of mantra chanting. Mantra chanting is a sound-based meditative practice that combines rhythmic repetition, focused attention, and controlled breathing. These elements are known to induce a relaxation response characterized by reduced sympathetic activity and enhanced parasympathetic dominance. Improved autonomic balance plays a crucial role in glucose metabolism by enhancing insulin sensitivity and reducing stress-mediated hyperglycemia.

In addition to autonomic regulation, mantra chanting may influence glycemic control through improvements in psychological well-being. Reduction in stress and depressive symptoms, as demonstrated in other components of the thesis, may indirectly contribute to better metabolic regulation by attenuating cortisol secretion and inflammatory processes associated with insulin resistance. Improved mental calmness and emotional stability may also support healthier behavioral patterns, such as mindful eating and better adherence to daily routines, which further influence glycemic outcomes.

The magnitude of HbA1c reduction observed in this study is clinically relevant, as even modest decreases in HbA1c are associated with a reduced risk of progression to type 2 diabetes and related complications. Importantly, the study population consisted of working adults without intensive lifestyle modification programs, highlighting the feasibility and practicality of mantra chanting as a supportive intervention in real-world occupational settings.

While the absence of a control group limits the ability to establish definitive causality, the statistically significant pre–post improvement, coupled with established physiological mechanisms linking stress reduction to glycemic regulation, supports the potential role of mantra chanting as a complementary approach to metabolic health management. The findings align with growing evidence suggesting that mind–body interventions can positively influence metabolic parameters by targeting stress-related pathways.

V. CONCLUSION

The present study concludes that mantra chanting produces a statistically significant reduction in HbA1c levels among corporate personnel. The observed improvement in glycemic regulation suggests that mantra chanting may serve as an effective supportive intervention for managing stress-related metabolic disturbances in occupational populations.

By reducing psychological stress and improving autonomic balance, mantra chanting appears to influence key pathways involved in long-term glucose regulation. Its simplicity, low cost, and ease of implementation make it particularly suitable for incorporation into workplace wellness and preventive health programs.

Although further controlled and long-term studies are required to confirm these findings, the results of the present study provide promising evidence supporting the role of mantra chanting as a non-pharmacological, lifestyle-based approach for improving glycemic health among working adults.

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