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Influence of Mindfulness Meditation on Metabolic Health of Middle Aged Men Factory Workers

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Abstract: Metabolic health describes the biochemical processes to maintain the functioning of the body. It has ideal levels of blood sugar, triglycerides, high-density lipoprotein (HDL) cholesterol, blood pressure, and body mass index. Factory workers are exposed to various health hazards which contribute to the rapid increase in the metabolic diseases and reduction in the efficiency and productivity of workers. Globally Metabolic Syndrome can be estimated to be about 25 % of world population and in India 26% male suffer from Metabolic Syndrome. Yoga and Mindfulness Meditation can help to maintain overall physical and emotional health by improving metabolism. The objectives of the study was to find out whether there would be any significant difference on selected Biochemical variable High-Density Lipoprotein (HDL) and Psychological variable Job satisfaction due to Mindfulness Meditation on middle-aged men factory workers. The Random group experimental study was conducted to find Influence of Mindfulness Meditation on High-Density Lipoprotein and Job satisfaction which indicate Metabolic Health of middle-aged men factory workers. For this Study 30 middle-aged men factory workers were randomly selected and assigned 15 to each Mindfulness Meditation group (experimental group) and control group for an 8-week intervention. Pre-test and Post-test were conducted before and after the training program for Experimental group I and Control group II on the Biochemical variable High-Density Lipoprotein (HDL) and on Psychological variable Job satisfaction using Job satisfaction scale developed by Dubey *et al.* (1989). ANCOVA was used to find out the significant differences among the group. Test of significance was fixed at 0.05 level of confidence. It is concluded that Mindfulness Meditation had a significant impact on Bio chemical variable and Psychological variable among Metabolic Health of middle-aged men factory workers. Mindfulness Meditation can enhance Metabolic Health and Job satisfaction level of middle-aged men factory workers.

Keywords: Mindfulness meditation, Metabolic health, High-Density lipoprotein, Job satisfaction, Middle-aged Men factory workers

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Introduction

When all risk factor variables are at ideal levels without the need of medicine, we have a high prevalence of metabolic health. These decided that metabolic health meant not needing any drugs to maintain healthy blood sugar, triglyceride, HDL cholesterol, blood pressure, or waist circumference values. A person's risk for cardiovascular disease, diabetes, and stroke may be directly influenced by these variables. Keeping glucose levels within a healthy range via consistent decision-making will enhance most of these signs.

Air pollution is another risk factor that might raise the likelihood of metabolic diseases, and the workplace environment may also play a role. Increased air pollution has been linked to insulin resistance, weight gain, and obesity in recent epidemiological and experimental investigations. This may also put the workers at such establishments at a higher risk of developing metabolic syndrome and cardiovascular disease. However, factory employees' way of life and health may be drastically altered by their working circumstances. The purpose of this study was to determine whether or not middle-aged male manufacturing employees who practiced mindfulness meditation saw improvements in their metabolic health, which would lead to greater productivity and satisfaction.

Mindfulness- the goal of meditation is to achieve a general sense of well-being by gaining access to one's natural and positive state of mind, a condition of mental peace that may stay regardless of one's circumstances in life. Differences in emotional reactions and emotional regulation are underpinned by brain circuits that are highly plastic, or malleable via experience and in response to a variety of treatments. Thus, this malleability may be the basis for potential good change, and Yogic Practices like meditation and mindfulness may make it feasible to develop the kinds of mental habits that foster the kinds of positive cognitive and behavioral shifts that boost well-being and fortitude. It has been hypothesized that training in compassion-based

meditation might increase synaptic plasticity, therefore favoring brain networks that underpin social behavior, emotional self-regulation, and well-being (Brown and Ryan, 2003).

According to a recent research funded by the US Agency for Healthcare Research and Quality, meditation therapies mitigate stress in several ways. Several meta-analyses and systematic reviews have shown the positive effects of mindfulness meditation on mental health.

Mindful breathing, a body scan, and different types of mindful movement are all components of Mindfulness Meditation. In this article, we examined the effects of mindfulness meditation on middle-aged male manufacturing employees' high density lipoprotein (HDL) levels and job satisfaction.

Emotion regulation and mindfulness:

Meditation has been shown to improve one's capacity to control one's emotions. Better processing and control over one's reactions to one's environment or situations may result from enhanced self-awareness that can be achieved via practicing mindfulness. The benefits of this expanded perspective include more compassion, more constructive thought processes, and less nervousness. Mindfulness meditation has been shown to lessen the tendency to dwell on negative thoughts, which is a boon to mental and emotional health.

Parameters of Metabolic Health:

Waist Circumference, Blood Pressure, Blood Sugar Levels, Triglycerides and Lipid Profile should be under normal levels else metabolic health will change into Metabolic Syndrome.

Symptoms and Diagnosis Criterion for Metabolic syndrome:

The diagnostic criteria for metabolic syndrome are – (i) A waistline of 40 inches or more for men, (ii) A blood pressure of 130/85 mm Hg or higher, (iii) A triglyceride level above 150 mg/dl, (iv) A fasting blood glucose (sugar) level greater than

100 mg/dl, and (vi) A high-density lipoprotein level (HDL) less than 40 mg/dl (men).

Prevention of Metabolic Syndrome:

Lifestyle Modification, Physical Exercise, Dietary changes, Complementary Therapies, Yoga including Meditation, walking.

The objective of this study was to find out whether there would be any significant difference on selected Biochemical variable such as High-Density Lipoprotein (HDL) and Psychological variable such as Job satisfaction due to Mindfulness Meditation on middle-aged men factory workers. It was hypothesized that there would be significant differences between Mindfulness Meditation group and the control group on Biochemical variable High-Density Lipoprotein (HDL) and Psychological variable Job satisfaction due to Mindfulness Meditation on middle-aged men factory workers.

The inclusion criteria for this study was –(i) Only metabolically healthy male manufacturing personnel of middle age participated in the study; (ii) In the analysis, only participants aged 40 to 55 were included; (iii) Only Chennai residents were considered for participation in the study; (iv) Mindfulness Meditation was the sole variable that could be manipulated and (v) As dependent variables, only High-Density Lipoprotein(HDL) and Job Satisfaction (a psychological indicator) were included in the analysis. The exclusion criteria for this study was- (i) No account was taken of any supplementary therapies the individuals may have received; (ii) No effort was made to account for the subject's way of life; (iii) During the training phase, the participants' jobs and routines were disregarded; and (iv) No account was taken of extraneous variables like food, habits, lifestyle, body composition, socioeconomic level, or drive.

Materials and Methods

30 middle-aged males (group I = 15; group II = 15) in good metabolic health who work in factories in Chennai were recruited at random using a random sample group design for the

experimental study. It was hypothesized that middle-aged male factory workers who practiced Mindfulness Meditation would show significant differences from the control group on the biochemical variable -- High-Density Lipoprotein (HDL) and the psychological variable Job satisfaction. High-Density Lipoprotein (HDL) and Job Satisfaction (as measured by the Job satisfaction scale developed by Dubey *et al.* (1989) were assessed pre-training for both the Experimental (group I) and Control groups (group II). There were 25 items on the work satisfaction scale, each having a 5-point Likert scale response option (Strongly concur, concur, unsure, disagree, and strongly disagree) ranging from 0 to 4. Mindfulness Meditation was given to Group I (the experimental group), whereas Group II (the control group) did not receive any treatment other than active rest. Both Groups I and II were retested on the same dependent variables after eight weeks of study. Statistically significant differences between the experimental and control groups were identified using analysis of covariance (ANCOVA).

Results and Discussion

Analysis of Covariance (ANCOVA) was utilized to evaluate the significance of the difference between the two groups before and after the training period. The hypothesis was tested at a level of confidence of 0.05.

The scores on the pre-test were not statistically significant at the 0.05 level because the F value of 0.30 was less than the F value threshold of 4.2. This indicated that the pre-test randomization was fair and that there were no significant differences between the groups. As the post-test F value of 83.85 was greater than the minimum required F value of 4.2, it was determined that there was a statistically significant difference between the groups. This demonstrated that there were statistically significant differences in the post-test averages of the participants. The pre- and post-test results of the groups were used to calculate adjusted mean scores, which were then statistically examined.

Table 1: Analysis of covariance of the means of experimental group and the control group on high- density lipoprotein (mg/dl)

TEST	EXP. GROUP	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	DEGREE OF FREEDOM	MEAN SQUARES	OBTAINED F-RATIO
PRE	51.95	52.65	Between	3.68	1	3.68	0.30
			Within	346.65	28	12.38	
POST	71.23	53.42	Between	2378.08	1	2378.08	83.85
			Within	794.15	28	28.36	
ADJUSTED MEAN	71.24	53.40	Between	2361.80	1	2361.80	80.37
			Within	793.39	27	29.38	

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level, of confidence for Df 1 and 28=4.2, 1 and 27=4.21)

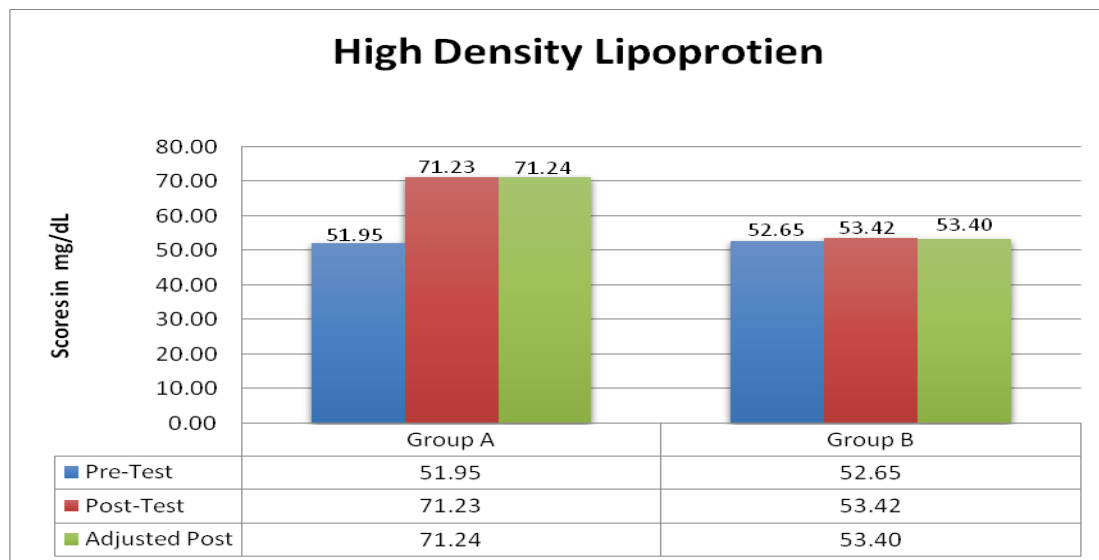


Fig. 1: Mean differences among the groups on high- density lipoprotein (HDL) (mg/dl).

Table 2: Analysis of covariance of the means of experimental group and the control group on job satisfaction

TEST	EXP. GROUP	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	DEGREE OF FREEDOM	MEAN SQUARES	OBTAINED F-RATIO
PRE	48.60	46.13	Between	45.63	1	45.63	0.15
			Within	8685.33	28	310.19	
POST	31.20	44.73	Between	1373.63	1	1373.63	8.50
			Within	4525.33	28	161.62	
ADJUSTED MEAN	30.45	45.48	Between	1686.60	1	1686.60	34.90
			Within	1304.88	27	48.33	

* Significant at 0.05 level of confidence. (Table F ratio at 0.05 level, of confidence for Df 1 and 28=4.2, 1 and 27=4.21)



Fig. 2: Mean differences among the groups on job satisfaction.

The calculated F value of 80.37 was greater than the required minimum of 4.21. This revealed a statistically significant change in High-Density Lipoprotein (HDL) among Middle-Aged Men's Metabolic Health following 8 Weeks of Mindfulness Meditation. Figure 1 illustrates the ranked average of high-density lipoprotein adjustments made for this study.

In Group I of the experiment, mindfulness meditation generated statistically significant alterations in HDL levels (Table 1). With a degree of confidence of 0.05, the hypothesis was therefore accepted.

The results of the pre-test were not statistically significant at the 0.05 level because the resulting F value of 0.15 was less than the required F value of 4.2. This indicated that the pre-test randomization was fair and that there were no significant differences between the groups. Examining the post-test scores revealed a statistically significant difference between the groups, as the resulting F value of 8.50 was greater than the minimum threshold of 4.2. This demonstrated that there were statistically significant differences in the post-test averages of the participants. The pre- and post-test results of the groups were used to calculate adjusted mean

scores, which were then statistically examined. The calculated F value of 34.90 exceeded the minimum F value threshold of 4.21. There was a significant difference between means after eight weeks of Mindfulness Meditation for Metabolic Health of Middle-Aged Men in the Factory. Figure 2 depicts the ranked adjusted mean of fasting blood glucose.

Group I participants showed an increase in job satisfaction after practicing mindfulness meditation (Table 2). With a degree of confidence of 0.05, the hypothesis was therefore accepted. Guyot *et al.* (2018) examined the influence of depressive symptomatology on the association between mindfulness, the MetS, and its risk variables in a large sample of the general adult population. There were 17,490 participants in total. Greater mindfulness was associated with a decreased risk of metabolic syndrome (OR: 0.73, 95% CI: 0.57-0.93), a smaller waist circumference, greater HDL-cholesterol, and lower baseline blood glucose among individuals with depressive symptoms. Higher levels of mindfulness were found to reduce the risk of developing a MetS only in individuals who already exhibited depressive symptoms.

Andrews *et al.* (2014) established a

theoretical and empirical link between RFT and mindfulness. Measuring employee levels of job satisfaction, this study contributes to the limited corpus of literature directly or indirectly relating RFT to turnover intentions. Lastly, this study investigates the relationship between mindfulness, job satisfaction, and intention to quit, building on previous research demonstrating a positive correlation between the three variables.

Conclusion

It was determined that the levels of High-Density Lipoprotein (HDL) and Job Satisfaction were considerably higher in the Experimental Group I of Middle-aged Men Factory Workers who practiced Mindfulness Meditation than in the Control Group II. Because of this, practicing mindfulness meditation is excellent for the metabolic health of middle-aged men who work in factories.

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