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Impact of Yoga Practice to Tribal Male People with Diabetes at Kodaikannal Hills, India

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Abstract: As per the experimental research, Fasting Blood Sugar level for each members in both groups (Experimental and Control groups) were estimated before the training and after the training. The research work reveals that there is significant difference in the fasting blood sugar level between pre-test and post-test of the members in the experimental groups. The yoga practices among the people with diabetes is very effective in controlling the blood glucose level as the fasting blood sugar level was significantly reduced in the post-test among the members of the experimental group. Whereas there is no significant difference in the fasting blood sugar level between the post and pre-tests among the members of control group who have not taken any yoga practices.

Keywords: Diabetes, Non-Communicable Diseases, Blood Glucose, Yoga

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Introduction

Health, in general, is considered as a wealth. There are different types of wealth or assets such as land, properties, shares, gold, bank deposits etc., but health is the most valuable asset than anything else. As health is the base for the creation of any type of assets or wealth that is why in our day to day lives, we ask “how are you?” or “how is your health?” while we meet each other. All other assets come only next to the human health. Human health, infact, a predominant factor which determine economic development. Development and management of

the quality of human health is an indispensable duty of the individual as well as the State. Of late, the quality of human health is impaired due to various reasons such as structural changes in the economy, globalization, and life style disorder due to changes in the employment and consumption pattern that is due to modernization, mechanization and computerization (Raghuram, 2021).

At present around 70% of the total death (41 million) is caused by Non-Communicable Diseases such as abnormal Blood Pressure,

Cholesterol, Diabetes, Heart and Kidney Disease including Cancer. Most of these diseases are caused by life style disorder. Now a days people spend more money on medicines and take medicines as food to manage their health status. The conventional medication not only involves huge expenditure but also ends with many side effects and this make people to think of alternative medicines especially AYUSH way of treatment for their ailments. Therefore, the authors made an attempt to examine the impact of yoga and meditation to cure diabetes among the tribals at Kodaikannal hills.

Materials and Methods

Number of people with diabetes has been increasing due to rapid urbanization, industrialization, sedentary life styles, unhealthy diets, stress etc. In India, type -2 diabetes most often develops in people over aged 45, but more and more children, teens and young adult also developing it now a days. Conventional treatment for diabetes is quite expensive and it helps only to manage diabetes with lot of side effects. Therefore, people with diabetes think of solutions from AYUSH especially, drugless treatment of yoga and meditation.

The objective of the study was to examine the impact of constant yoga practice on the management of blood glucose level among the tribals at Kodaikannal hills.

60 people with diabetes were selected from two tribal villages namely Korankombu and Nallur Kadu at KC Patti panchayat from Kodaikannal hills. Among them 30 members were employed as the experimental group and the rest 30 members as control group. Pre- and post-test was observed for both groups. We have followed the experimental research method for our investigation.

Results

The yoga asanas mentioned in Table 1 were practiced for three months by the members of the

experimental groups with professional yoga master. No yoga asana training was given to the members of control group. The daily class was closed with meditation. To find out the impact of yoga practice on the control of diabetes, pre-test (before the training) and post-test (after the training of three months) were conducted for both the groups and their results are presented in Table 2.

Table 2 shows the comparison between experimental and control groups' FBG score and the associated risk factors of diabetes among middle-aged tribal men with diabetes during Pre-test, Post-test. Considering the pre-test FBG score, experimental group of patients are having 140.27 FBG score and control group of patients are having 139.50 FBG score, so the mean difference of FBG score is 0.77. As this difference is very small, it is not statistically significant. It was confirmed using an independent t test with the value of $t=0.19$ at $P> 0.05$ level which indicated that it was not a significant difference.

Considering the post-test FBG score, experimental group of patients are having 130.27 FBG score and control group of patients are having 138.43 FBG score, so the mean difference of FBG score is 8.16. This difference is large and it is a statistically significant difference. It was confirmed using an independent t test with the value of $t=2.04$ at $P\leq 0.05$ level which indicates highly significant difference.

Discussion

Sachdev (2012) determined the prevalence rate of type-2 diabetes mellitus (DM) and its associated risk factors among tribal population of Rajasthan. The study was done with total population of 1296 persons (599 males and 697

females) who were above 18 years from three districts of Rajasthan. The overall prevalence rate of diabetes was 3.9% and pre-diabetic was 6.6% among the selected tribal population. Male tribal population's DM rate (5.2%) was higher than that

Table 1: Asanas for experimental groups

	60 min Yoga intervention per day for 3 months (Details of yoga practices for experimental group)						
S. No.	Yogic practices	Duration	Rest	Total Duration	Rounds	Breath	Grand Total
1	Prayer	1 min	-	1 min	1	-	1 min
2	Loosening exercises	6 min	1 min	7 min	1	-	7 min
3	Surya Namaskar	1 min	10 sec	1 min 10 sec	2	8	2min 20 sec
4	Padahastasana	1 min	20 sec	1 min 20 sec	2	8	2min 40 sec
5	Halasana	1 min	10 sec	1 min 10 sec	2	8	2min 20 sec
6	Sarvangasana	1min	10 sec	1 min 10 sec	2	8	2min 20 sec
7	Matsysana	1 min	10 sec	1 min 10 sec	2	8	2 min 20 sec
8	Bhusangasan	1 min	10 sec	1 min 10 sec	2	8	2 min 20 sec
9	Shalabasana	30 sec	5 sec	35 sec	1	8	35 sec
10	Dhanurasana	30 sec	5 sec	35 sec	2	8	1 min10 sec
11	Ushtrasana	1 min	10sec	1 min 10 sec	1	8	1min 10 sec
12	Navasana	1 min	15 sec	1 min 15sec	1	8	1 min 15sec
13	Ardha Machianthrasana	1 min	10 sec	1 min 10 sec	1	8	1 min 10 sec
14	Paschimottasana	1 min	10 sec	1 min 10 sec	2	8	2 min 20 sec
15	Mandukasana	1 min	10 sec	1min 10 sec	2	8	2 min 20 sec
16	Savasana	2 min	-	2 min	1	8	2 min
17	Kabalapathi	2 min	10 sec	2 min 10 sec	1	8	2 min 10 sec
18	Bhastrika	2 min	10 sec	2 min 10 sec	1	8	2 min 10 sec
19	NadiShodhana Pranayama	2 min	10 Sec	2 min 10 sec	2	8	4 min 20sec
20	Thought therapy meditation	16 min	-	16 min	1	-	16 min
21	Thanking Prayer	1 min	-	1 min	1	8	1 min

Table 2: Comparison of experimental and control groups mean FBG score during pre-test and post-test

FBG Score	Group				Mean Difference	Student independent t=test
	Experimental (n=30)		Control (n=30)			
	Mean	SD	Mean	SD		
Pre-test	140.27	16.00	139.50	15.22	0.77	t=0.19 P=0.85 DF=58 (NS)
Post-test	130.27	16.00	138.43	15.16	8.16	t=2.04 P=0.05* DF=58 (S)

S =Significant at 0.05 level of confidence

NS=Not significant.

of female population's DM rate (2.9%) in all tribal areas. The analysis showed that the gender, age, body mass index, waist circumference and blood pressure level were associated with the prevalence of diabetes mellitus significantly. The study concludes that lifestyle changes are the main risk factors which lead to type-2 DM especially among migrant population.

Upadhyay *et al.* (2013) studied the prevalence of diabetes mellitus of various tribal populations in India, using seven reviews done between 2000 and 2011. The information of meta-investigation of data were analysed of those studies. The impaired fasting glucose (IFG) varied from 5.1% to 13.5% and the impaired glucose tolerance (IGT) varied from 6.6% to 12%. This study clearly identified that pre-diabetic prevalence symptoms are higher than the present prevalence of diabetics from the reports obtained. This investigation revealed that the tribal population may have to face the potential increase in diabetes in the upcoming years and the lifestyle changes might be the major cause of the prevalence of this chronic disease among tribal population.

Kernick (2003) investigated the prevalence of DM and pre-diabetes by selecting tribal samples from 5 districts of Jammu and Kashmir valley in India. Multistage cluster sampling data collection

was adopted in the study. Socio demographic factors, medical history of subjects, biochemical variables like HbA1C and random blood glucose level measurements were taken for analysis. Out of 6808 study subjects, 2872 (42%) were men and 3936 (58%) were women. Around 1.26% had diabetes mellitus (0.5 male and 0.9% female) and 11.64% had pre-diabetes. The study shows prevalence ratio of tribes of the Kashmir valley lower than the general population. But, the ratio of pre-diabetes is higher and the same is an indication of future diabetes among the tribal population. The research concludes that future generation not only in cities, the tribes also have to face the impact of DM due to sedentary lifestyle and obesity.

Conclusion

The experimental research reveals that the three months yoga practice for the people with diabetes has significantly reduced the blood glucose level among the members of the experimental group as we compare with the controlled group. It is to conclude that the constant yoga and meditation practice may help the people with diabetes to manage the diabetes without medication. People with diabetes may come out from this disease if they make the yoga practice as part and parcel of their day to day activities.

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