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EFFECT OF YOGIC PRACTICE ON NUTRITIONAL AND ACADEMIC PERFORMANCE OF THE SELECTED ADOLESCENTS

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ABSTRACT

The supplementary effect of yoga practice on nutritional and academic performance was studied among adolescent under the age group of 13-15 years. About 500 adolescents were assessed for their demographic, dietary pattern, breakfast skipping patterns, nutritional status (weight, BMI and body fat percentage) and academic performance (scales such as arithmetic, concept and processes scale, reading and writing scales). For experimentation study 50 breakfast consumers and 100 breakfast skippers were selected. Fifty breakfast consumers were taken as Control group (n=50) and 100 breakfast skippers were divided into two groups such as Experimental group I (n=50) with no intervention and Experimental group II (n=50) under gone yoga practice daily for the period of 90 days. Results about the nutritional status of the study revealed that there was a significant increase at 1% level in the weight, Body Mass Index (BMI), and body fat percentage levels of both Control and Experimental group II when compared to Experimental group I. Results of academic performance of the study showed a significant increase at 1% level in all the three groups, with less mean difference in Experimental Group I. Thus the present study concluded that yoga practice on regular basis will improve both nutritional and academic performance of adolescents.

Key words: Yoga, Adolescence, Nutritional status, Academic Performance.

INTRODUCTION

Breakfast is regarded by many nutritionists as the most important meal of the day. Breakfast provides a significant proportion of the day's total nutrient intake and offers the opportunity to eat foods fortified with nutrients such as foliate, iron, vitamins and fiber. Essential vitamins, minerals and other nutrients can only be gained from food (Spear, (2002). Regular meal pattern is an important factor in ensuring the physiological balance of the body for all age groups (Boutelle *et.al.*, 2003).

Breakfast for academic achievement is reflected in the effects of breakfast on cognitive performance. Research suggests that skipping breakfast detrimentally affects problem solving, short-term memory, attention and episodic memory in children. Conversely, when children consume breakfast performance is enhanced on measures of vigilance attention, arithmetic, problem solving tasks, and logical reasoning (Neumark-Sztainer *et.al.*, 2004). Adolescents who skip breakfast are at increased risk for skipping other meals, snacking, being less physically active and being overweight and obese.

Breakfast skipping in adolescents has been associated with various health-compromising behaviors and unhealthy lifestyles, such as tobacco, alcohol, and substance use, and risk-taking in general (Eisenberg *et.al.*, 2004). Food is one of the basic necessities of life and there are different sources of food such as cereals, meat, vegetables, fruits, milk and milk products etc. In almost all

over the world cereals are used as staple food. Cereal grains are cheapest source of energy and protein in human diet (Neumark-Sztainer *et.al.*, 2000).

Yoga -a state of alert rest as stated by Maharishi Mahesh Yogi, who founded a new technique of meditation, popularly known as transcendental meditation. By practicing yoga, a person is supposed to reach a state of mental equanimity, where responses to favorable or unfavorable external events are well under the individual's control, and responses are moderate in intensity (Rahnema *et.al.*, 1995).

Yoga develops stability of mind which further leads to good concentration. Yoga gives the individual more power of concentration in every work which leads to good results (Wesnes *et.al.*, 2003). Healthy mind lives in a healthy body, being psychological in nature, yoga leads to both mental and physical health. Thus, yoga can increase the efficiency of performing a task and as well achievement level (Simeon, 1989).

MATERIALS AND METHODS

The present study was carried out in Salem district of Tamilnadu and comprised of 500 adolescents of 13-15 years of age group. About 500 adolescents were assessed for their demographic status, dietary, life style and breakfast skipping pattern. The nutritional status of the subjects was studied through anthropometric assessment like height, weight, body mass index, and percentage of

body fat. The academic performance was assessed by using four types of scale namely arithmetic scales, Concept and Processes scales, Reading and Writing scales. Each heading comprised of 11 questions. The subjects were encouraged to answer the academic performance questionnaire. From 500 adolescents, 50 breakfast consumers and 100 breakfast skippers were selected. Fifty breakfast consumers were taken as Control group (n=50) and 100 breakfast skippers were divided into two groups such as Experimental group I (n=50) with no intervention and Experimental group II (n=50) under gone yoga practice daily for the period of 90 days. The impact of supplementation was studied by assessing the initial and final status of nutritional and academic performance of the selected subjects. The collected data were statistically analyzed for results.

RESULTS AND DISCUSSION

DEMOGRAPHIC STATUS OF THE SELECTED SUBJECTS

Among the selected subjects 36.4 per cent of boys and 36.6 per cent of the girls belongs to 14 years and about 32.7 percent of boys and 32.3 per cent of the girls belongs to the age group of 15 years. More than 50 percent of selected subject's parents are educated up to higher secondary level.

DIETARY PATTERN OF THE SELECTED SUBJECTS

Soft drink consumption of the selected subjects revealed that 70 per cent of the subjects regularly having coffee. Regarding consumption of tea 45 per cent of the subjects having it daily, 37 per cent, 10.4 per cent and 7.6 per cent were consuming it alternatively, weekly and occasionally. Results about carbonated drinks consumption revealed that 56 per cent of the subjects consuming coca-cola in alternative days and 47 per cent consuming fanta in alternate days.

LIFE STYLE PATTERN OF THE SELECTED SUBJECT

Regarding the time management in various activities about 40 minutes were spent for their personal routine work, 82 – 95 minutes for reading, 30 minutes for writing home works at home. Exercise pattern of the selected subjects showed that 74.83 per cent and 45.07 per cent know about the exercise. About 61.77 per cent do their exercise in the morning time. Regarding smoking habits of the selected subjects 100 per cent of both boys and girls won't having the habits of smoking, drinking and dieting practices.

BREAKFAST PATTERN OF THE SELECTED SUBJECTS

Regarding breakfast consumption of the selected subjects 30% (150 subjects) of the subjects won't having

their breakfast regularly for the past one year. The main reason for not having breakfast was lack of time and not liking the food.

IMPACT OF YOGA PRACTICE ON NUTRITIONAL AND ACADEMIC PERFORMANCE OF THE SELECTED SUBJECTS

IMPACT OF YOGA PRACTICE ON NUTRITIONAL STATUS

The table I shows that the mean anthropometric status of the selected subjects. Mean weight of control groups 't' value was 12.4 which is less than 1% level of significance. The two tailed p-value is 0.00 which means that the mean final weight was increased (1.47kg) which is significant at 1% level after consumption of homemade breakfast food. The results of 't' value for the experimental group I was 11.6 which is more than the 5% level of significant. The two tailed p-value is 0.41 which means that the final mean weight was increased (0.1kg) which is not significant at 5% or 1% level at the end of the study. The results of 't' value for experimental group II was 10.9 which is less than 1% level of significant. The two tailed p-value is 0.00 which means that the mean final weight was increased (2.08kg) which is significant at 1% level after the practice for a period of 3 months.

The mean BMI of control group, 't' value was 1.91 which is less than 1% level of significance. The two tailed p-value is 0.00 which means that the mean final BMI was increased (0.6kg/m²) which is significant at 1% level after consumption of homemade breakfast food. The results of 't' value for the experimental group I was 13.7 which is more than the 5% level of significant. The two tailed p-value is 0.51 which means that the final mean BMI was increased (0.18kg/m²) which is not significant at 5% or 1% level at the end of the study. The results of 't' value for experimental group II was 3.6 which is less than 1% level of significant. The two tailed p-value is 0.00 which means that the mean final BMI was increased (2.47kg/m²) which is significant at 1% level after the practice for a period of 3 months.

Regarding mean body fat of control group 't' value was 0.18 which is less than 1% level of significance. The two tailed p-value is 0.00 which means that the mean final body fat was increased (0.28%) which is significant at 1% level after consumption of homemade breakfast food. The results of 't' value for the experimental group I was 6.3 which is more than the 5% level of significant. The two tailed p-value is 0.31 which means that the final mean body fat was increased (0.05%) which is not significant at 5% or 1% level at the end of the study. The results of 't' value for experimental group II was 4.8 which is less than 1% level of significant. The two tailed p-value is 0.00 which means that the mean final body fat was increased (2.1%) which is significant at 1% level after the practice for a period of 3 months are graphically represents Figure I.

Table I -Comparison of mean initial and final anthropometric measurements of the selected adolescents

Variables	Groups	Initial mean \pm SD	Final mean \pm SD	Initial and final 't' value	Standard error deviation	't' value
Weight (kg)	Control Group	35.4 \pm 2.71	36.89 \pm 2.14	1.47	0.15	12.4**
	Experimental Group I	36.3 \pm 2.81	36.41 \pm 1.53	0.1	0.81	14.6 ^{NS}
	Experimental Group II	36.4 \pm 2.81	38.51 \pm 2.12	2.08	0.41	12.9**
BMI (kg/m ²)	Control Group	19.08 \pm 8 .98	19.68 \pm 0.96	0.6	1.81	1.91**
	Experimental Group I	19.4 \pm 8.12	19.63 \pm 0.94	0.18	0.21	13.7 ^{NS}
	Experimental Group II	19.3 \pm 0.97	21.85 \pm 0.78	2.47	0.31	3.6**
Body fat (%)	Control Group	18.7 \pm 0.31	19.06 \pm 0.83	0.28	0.41	0.18**
	Experimental Group I	19.03 \pm 0.87	19.08 \pm 0.95	0.05	0.32	6.3
	Experimental Group II	19.31 \pm 1.11	31.41 \pm 0.89	2.1	0.22	4.8**

**-Significant at 0.01% level; *-Significant at 0.05% level; NS-Not significant

Table II-Impact of yoga practice on Academic Performance of the selected subjects

Academic Performance scores	Groups	Initial Mean \pm SD	Final Mean \pm SD	difference between initial and final 't'	Standard Error Deviation	't' value
Arithmetic	Control Group	6.10 \pm 0.99	7.38 \pm 0.94	1.3	0.16	7.79**
	Experimental Group I	6.02 \pm 1.05	6.11 \pm 1.10	0.09	0.17	9.63 ^{NS}
	Experimental Group II	6.10 \pm 1.03	7.80 \pm 0.98	1.7	0.15	10.81**
Concept and processes	Control Group	6.14 \pm 0.94	7.88 \pm 1.08	1.7	0.15	11.1**
	Experimental Group I	6.14 \pm 0.96	6.17 \pm 1.01	0.03	0.16	8.75 ^{NS}
	Experimental Group II	6.20 \pm 1.10	8.29 \pm 1.16	2.09	0.19	10.63**
Writing	Control Group	6.12 \pm 1.04	7.58 \pm 1.08	1.4	0.15	9.45**
	Experimental Group I	6.16 \pm 1.09	6.46 \pm 1.10	0.3	0.16	9.87 ^{NS}
	Experimental Group II	6.16 \pm 1.03	8.48 \pm 0.90	2.32	0.17	13.27**
Reading	Control Group	6.02 \pm 0.99	7.68 \pm 1.07	1.6	0.18	9.11**
	Experimental Group I	6.14 \pm 1.06	6.64 \pm 0.98	0.5	0.157	11.32 ^{NS}
	Experimental Group II	6.24 \pm 1.06	7.92 \pm 0.98	1.6	0.18	9.13**

**-Significant at 0.01% level; *-Significant at 0.05% level; NS-Not significant

IMPACT OF YOGA PRACTICE ON ACADEMIC PERFORMANCE OF THE SELECTED SUBJECTS

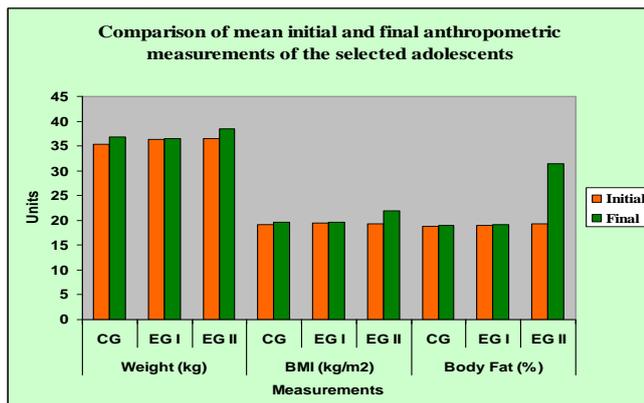
The results of table II shows that the mean academic performance of the selected subjects. The mean arithmetic scores of the Control group was 6.10 \pm 0.99 and it was increased to 7.38 \pm 0.94 at the end of the study with a significant difference at (p<0.01) level. In Experimental group I the initial mean arithmetic scores was 6.02 \pm 1.05 and it was increased to 7.22 \pm 1.10 after

the study period significant difference at (p<0.01) level. In Experimental group II the initial mean score was 6.10 \pm 1.03 and it was increased to 7.80 \pm 0.98 with a significant difference at (p<0.01) level. Increase in mean difference of arithmetic scores was found to be more in Experimental group II followed by Control group and Experimental group I.

The mean Concepts and processes scores of the Control group was 6.14 \pm 0.94 and it was increased to 7.88 \pm 1.08 at the end of the study with a significant difference

at ($p < 0.01$) level. In Experimental group I the initial mean Concepts and processes scores was 6.14 ± 0.96 and it was slightly increased to 7.58 ± 1.01 after the study period significant difference at ($p < 0.01$) level. In Experimental group II the initial mean score was 6.20 ± 1.10 and it was increased to 8.28 ± 1.16 with a significant difference at ($p < 0.01$) level. Increase in mean difference of Concepts and processes scores was found to be more in Experimental group II followed by Control group and Experimental group I.

Figure-I -Mean initial and final anthropometric measurements of adolescents



The mean writing scores of the Control group was 6.12 ± 1.04 and it was increased to 7.58 ± 1.08 at the end of the study with a significant difference at ($p < 0.01$) level. In Experimental group I the initial mean writing scores was 6.16 ± 1.09 and it was slightly increased to 7.46 ± 1.10 after the study period with significant difference at ($p < 0.01$) level. In Experimental group II the initial mean scores was 6.16 ± 1.03 and it was increased to 8.48 ± 0.90 with a significant difference at ($p < 0.01$) level. Increase in mean difference of writing scores was found to be more in Experimental group II followed by Control group and Experimental group I.

The mean reading scores of the control group was 6.02 ± 0.99 and it was increased to 7.68 ± 1.07 at the end of the study period with a significant difference at ($p < 0.01$) level. In Experimental group I the initial mean reading scores was 6.14 ± 1.06 and it was increased to 7.64 ± 0.98 after the study period with significant difference at ($p < 0.01$) level. In Experimental group II the initial mean weight was 6.24 ± 1.06 and it was increased to 7.92 ± 0.98 with a significant difference at ($p < 0.01$) level. Increase in mean difference of reading scores was found to be more in Experimental group I (Pollitt et al.⁹ showed that children at nutritional risk are likely to have even greater decreases in cognitive functioning following a fast. Berkey¹⁰ reported that a related factor that general academic performance has also been seen to suffer in breakfast skippers, and children who skip breakfast are less likely to report doing well with schoolwork.

CONCLUSION

Yoga leads to more beneficial changes in nutritional status and academic performance in 'breakfast skipping' adolescents. The above findings suggest that the doing of regular yoga practice has a good impact in improving both nutritional status and academic performance among the adolescents who are the future healthy citizens.

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