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EFFECT OF SUDARSHANKRIYAYOG ON IgG LEVELS IN COVID- 19 FULLY VACCINATED SUBJECTS.

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Abstract:
The study aims to determine the levels of serum IgG against Covid-19 fully vaccinated individuals after practising SKY (Sudarshan Kriya Yog). Quantitative method is applied in this research, and data were collected through pre- structured demographic profile questionnaire andCovid-19neutralizing antibody Microlisa test among 222 subjects in the Moti Lal Nehru Medical College vaccination center and SRN Hospital, including yoga centers of Prayagaraj, U.P. The study employed a quasi-experimental nonequivalent control group design. Purpose of research is to establish effectiveness of SKY in increasing IgG levels significantly helping body to build antibodies against COVID. Pre and post test data analysis using descriptive and inferential statistics showed the mean IgG score was increased from 22.07 to 77.3 after Sudarshan Kriya Yog among the study subjects in experimental group. The research concluded with observation of high IgG levels lasting about 2 months after the second vaccination and with practice of SKY further IgG levels increased significantly helping body to build antibodies against COVID with IgG levels peaking at 11 weeks after second dose.

Keywords: Yoga, COVID-19,Immunity,Sudarshan Kriya Yog, IgG levels, Covid -19 vaccination

1. Introduction

Sickness severity and mortality in COVID-19 cases were positively correlated with neutrophil count and negatively with lymphocyte count. Similarly to SARS-CoV and MERS-CoV infections, COVID-19 infection is associated with an increase in pro-inflammatory cytokines, which may play a crucial role in disease development. Controlling cytokine production and the inflammatory

response has been shown to be crucial in protecting COVID-19 pneumonia cases from cell and fluid accumulation in the lungs in several case studies on severely ill patients from China as well as in earlier investigations on SARS and MERS infections. It is also important to keep up the production of several inflammatory indicators.

A crucial tool for the body's ability to get rid of microbial diseases is host immunity. One of the key characteristics of COVID-19 infection is immune system impairment, as seen by lymphopenia. As a result, innate immunity plays a crucial role in combating the viral load. These natural innate immune defenses (NK cells and interferon, for example) are crucial in the early post-infection days until lymphocytes divide and differentiate into cells that can launch a potent immune response.

Keeping your lungs in good shape is a crucial step in lowering your risk of respiratory complications from SARS-CoV-2. Yoga has been shown in a number of scientific studies to be beneficial for people with COPD. Positive findings regarding the patients overall recovery and enhanced lung function have recently been reported from an interventional pilot study using tele-yoga on COVID-19 patients in Milan, Italy. As part of the intervention, a short video of simple breathing exercises (lasting just 4 minutes) was provided. SKY is one of the most popular integrative medicine techniques that is used all around the world. Previous research has demonstrated that SKY may offer patients a variety of advantages and considerably enhance the wellbeing of healthy people.

Essential research into the preventative and therapeutic potentials of complementary alternative therapy modalities like Ayurveda and Yoga is not being conducted in the midst of the current global crisis. This dissertation explores the potential role of the unusual breathing method known as Sudarshan Kriya Yoga (SKY) in the effort to halt the spread of this disease.

2. Materials and Methods –

Research Design - The study employed a quasi-experimental nonequivalent control group design. Both between-subjects (treatment vs. control) and within-subjects (baseline vs. post) effects are examined for a potential interaction. Only the experimental group received intervention, while the control group received standard treatment center care.

Population- In this study 222 subjects fully vaccinated with covid-19 vaccine, age range 25 years to 65 years will be selected from Moti Lal Nehru Medical College Prayagraj vaccination center, including yoga centers of Prayagaraj U.P

Sampling and Sample size - The sample was recruited by using purposive sampling technique and 222 subjects those who were fully vaccinated subjects were included in this study.

Inclusion criteria- Both male and female subjects with age range of 25 to 65 years.

Exclusion criteria - The following types of individuals were not included in the study :Subjects suffering from Cardio-vascular diseases (stroke), Musculo-skeletal disorders (affected body movement) , Smokers and Alcoholic, Pregnant and lactating women, Patients on steroids, chemotherapy or any other immune suppressant drugs, History of autoimmune disease like (Rheumatoid arthritis),Type1 diabetes patients, History of fever in last six weeks, Subject having history of adrenal insufficiency, Subject not suffering from covid-19

Tools for Data Collection - Demographic profile, Covid-19neutralizing antibody Microlisa test

Data Collection - 222 subjects were selected, with 111 assigned to the experimental group and 111 to the control group. The yoga was administered for 30 minutes over the course of 11 weeks, whereas the control group received only standard hospital care. Pre and post-test assay readings were recorded.

Data Analysis and Interpretation - Using IBM SPSS Statistics 22 and Microsoft Excel, descriptive and inferential statistical methods were utilized for data analysis. Using descriptive statistics, the central tendency (mean) and dispersion (standard deviation) of the variables were calculated. Student 't' test was used to analyze the effect of Sudarshan Kriya Yoga on IgG levels between experimental and control group. Paired 't' test was used to analyze the difference between 1 week, 3 week , 11 week level of IgG levels in both groups. Chi-Square (with yates correction) test was used to check the association between the pretest level of IgG with selected variables.

3. Results and Discussion –

In the experimental group, 34.2% people belonged to age group between 56-65 years and in control group, 34 (30.6%) belonged to the age group between 25-35 years. In the experimental group, majority, 57(51.3%) of subjects were male as well as in control group 56(50.4%).In the experimental group, majority, 41 (36.9%) people belong to height range between 171-180 and in control group, 45(40.5%) were in height range between 161-170.In the experimental group, 29.7% people belong to weight range between 51-60kg and in control group, 31.5% belong to the range between 40-50 kg. Data on BMI reveals that most of them had normal BMI in both experimental 101(90.9%) and control group 105 (94.5%).

S.No	Score of IgG	Experimental Group (n=111)						Control Group (n=111)					
		IgG 1		IgG 2		IgG 3		IgG 1		IgG2		IgG3	
		F	%	F	%	F	%	F	%	F	%	F	%
1.	0-10	4	3.6%					8	7.2%				
2.	11-20	50	45%					43	38.7%				
4.	21-30	51	45.9%	7	6.3 %	0	0%	60	54%	10	9%	8	7.2%
5.	31-40	6	5.4%	6	5.4 %	5	4.5 %	0	0%	21	18.9%	5	4.5%
6.	41-50			27	24.3%	5	4.5 %			41	36.9%	5	4.5%
7.	51-60			41	36.9%	1	0.9 %			31	27.9%	24	21.6%
8.	61-70			25	22.5%	29	26.1%			8	7.2%	33	29.7%
9.	71-80			5	4.5%	26	23.4%			0	0%	31	27.9%
10.	81-90					22	19.8%					3	2.7%
8.	91-100					23	20.7%					0	0%

It was identified that the mean scores of IgG among subjects in 1st week to 11th week in experimental group was 22.07 and 77.3 respectively with a mean difference of 55.23. Likewise the standard deviation was 6.07 and 15.4 respectively for 1st and 11th week and the calculated 't' value 36.845 which was significantly higher than the table value(3.39) . Hence Sudarshan Kriya Yoga is effective in increasing IgG levels among subjects seeking continuous intervention. Similarly, It was identified that, the mean score of IgG before and after in control group was 20.03 and 62.4 respectively. The mean score increased after11 weeks of second dose COVID vaccine administration. The mean difference was 42.37. Standard deviation were 6.06 and 15.58 respectively and the calculated 't' value 28.01 which was higher than the table value. Hence difference was found in the level of IgG in control group as well. However, more prominent difference was seen in experimental group as compared to control group.

Un paired 't' test was used to compare the level of IgG scores in 1 week of Sudarshan Kriya Yog among both the groups (where group 1 denotes Experimental and group 2 denotes Control group). It was identified that the mean scores of IgG among subjects in experimental and control group was 22.07 and 20.03 respectively with a mean difference of 2.03. Likewise the standard deviation of the experimental and control group was 6.07 and 6.06 respectively and the calculated 't' value 2.4 which was lesser than the table value(2.58) . There is no homogeneity in the level of IgG among experimental and control group of subjects in 1 week of Sudarshan Kriya Yoga. For 3rd week, It was identified that the mean scores of IgG among subjects in experimental and control group was 51.81 and 45.82 respectively with a mean difference of 5.98. Likewise the standard deviation of the experimental and control group was 11.76 and 11.74 respectively and the calculated 't' value 3.7

which was higher than the table value(3.098) . Hence Sudarshan Kriya Yoga is effective in increasing IgG levels among subjects seeking intervention. Further in 11th week, it was identified that the mean scores of IgG among subjects in experimental and control group was 77.3 and 62.4 respectively with a mean difference of 14.8. Likewise the standard deviation of the experimental and control group was 15.45 and 15.58 respectively and the calculated 't' value 7.14 which was higher than the table value(3.098). Hence, Sudarshan Kriya Yoga is effective in increasing IgG levels among subjects seeking intervention. Therefore, Sudarshan Kriya Yoga is effective in increasing IgG levels among subjects seeking intervention than level of IgG spiked in control group.

4. Conclusion –

The research presents the dynamics of anti-SARS-CoV-2 IgG antibodies after the 2nd dose of the vaccine against COVID-19 and provide interesting correlations with practice of SKY. The main finding of our research was that IgG levels lasted about 2 months after the second vaccination, which confirms that vaccinations enhance immune memory, not impairs it. We observed also a stronger and less diverse immune response in the case of women, and the elderly (over 49 years of age). Recent studies indicate a slightly reduced immune response, but they show the effectiveness of currently used vaccines against other variants of the SARS-CoV-2 virus. With practice of SKY ,IgG levels increased significantly helping body to build antibodies against COVID with IgG levels peaking at 11 weeks after second dose.

Table and Figures

Table 1

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Initial	22.0721	111	6.07635	.57674
	Final	77.3063	111	15.45303	1.46674

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Initial - Final	-55.23423	15.79410	1.49911	-58.20512	-52.26335	-36.845	110	.001

Table 2

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Initial	20.0360	111	6.06769	.57592
	Final	62.4144	111	15.58406	1.47917

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Initial - Final	-42.37838	15.94026	1.51298	-45.37675	-39.38000	-28.010	110	.001

Table 3

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Cortisol	1	111	16.0901	3.30990	.31416
	2	111	16.0901	3.30990	.31416

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cortisol	Equal variances assumed	.000	1.000	.000	220	1.000	.00000	.44429	-.87561	.87561
	Equal variances not assumed			.000	220.000	1.000	.00000	.44429	-.87561	.87561

Table 4

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Cortisol	1	111	18.9009	2.48616	.23598
	2	111	20.2883	2.58453	.24531

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cortisol	Equal variances assumed	.293	.589	-4.076	220	.000	-1.38739	.34039	-2.05822	.71655
	Equal variances not assumed			-4.076	219.670	.000	-1.38739	.34039	-2.05823	.71655

Table 5

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Cortisol	1	111	12.8829	1.86713	.17722
	2	111	17.7568	1.91271	.18155

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cortisol	Equal variances assumed	.740	.391	-19.211	220	.000	-4.87387	.25370	-5.37388	-4.37387
	Equal variances not assumed			-19.211	219.872	.000	-4.87387	.25370	-5.37388	-4.37387

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