

## Original Research Article

# Role of yoga in improving quality of life of hypothyroidism patients

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**Received:** 30 December 2018

**Accepted:** 02 February 2019

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### ABSTRACT

**Background:** Yoga is science of simple living that enlightens all aspects of life physical, mental, psychic and spiritual. Yoga helps in balancing and harmonizing body mind and emotions. Yoga improves pulmonary ventilation and gas exchange. Thus, it improves respiratory health and general wellbeing of individual. Aim was to assess role of yoga in improving the quality of life of hypothyroidism patients before and after 6 months of yoga.

**Methods:** Sixty adult patients of hypothyroidism participated in this prospective study and were divided into two groups. Quality of life of all the patients was assessed by WHO QOL BREF document in form of. The data obtained was analyzed using SPSS software (version 16.0). Four domain scores were assessed. Unpaired t test and paired t test was to compare normal controls with hypothyroid patients.

**Results:** There was a significant improvement of 17.79% in the physical aspect of quality of life of patients in the yoga group at the end of six months as compared to the patients in the control group. Significant improvement of 18.38% was also observed in the psychological aspect of quality of life of patients in the yoga group at the end of six months as compared to control group.

**Conclusions:** There is a profound improvement in physical and psychological domains of quality of life of hypothyroid patients. However, further studies over longer period of time may be helpful to evaluate the effect of yoga in these aspects of life.

**Keywords:** Domains, Hypothyroid, Quality of life, Yoga

### INTRODUCTION

Hypothyroidism is defined as failure of the thyroid gland to produce sufficient thyroid hormone to meet the metabolic demands of the body. Most common symptoms include weight gain, intolerance of cold, fatigue, depression, and poor memory.<sup>1</sup> Untreated hypothyroidism can contribute to hypertension, dyslipidemia, infertility, cognitive impairment, and neuromuscular dysfunction.<sup>2</sup> The recommended daily intake of iodine is of at least 75µg/day, which corresponds to 10g of iodized salt, according to recommendations of the World Health Organization (one part of sodium iodide in 100,000 parts of NaCl).<sup>3</sup> Prevalence is 1.9% in women, and it increases

with age. Drugs classically associated with thyroid dysfunction include lithium, amiodarone, interferon  $\alpha$ , interleukin-2, and tyrosine kinase inhibitors.<sup>2</sup> For hypothyroidism, treatment consists of substituting the deficient hormone, mostly with levothyroxine. The pharmacist's role in both hyper- and hypothyroidism is supportive, assisting the patient to reach a euthyroid state.<sup>4</sup> In the study of Ayurveda for thousands of years, Indian practitioners have adopted ways to account for your body constitutional type: your physical, emotional, and psychological makeup in healing all ailments and restoring the body to its beautiful healthy state. Chinese medicine has long since proven that therapies such as acupuncture and pressure point massage are helpful to relieve stress and correct hormonal imbalances.<sup>1</sup>

A proper yoga plan will include deep relaxation through meditation, slow and therapeutic asana practice that leads to strengthening the body and awareness on mind, body and breath, engaging pranayama and more meditation after asanas, and mudras for further meditation.<sup>5</sup>

Yogic exercise improves body functions through the manipulation of cardiovascular, respiratory, metabolic control mechanism.<sup>6</sup> In this study, author evaluated the quality of life in hypothyroid patients. Therefore, aim was to assess role of yoga in improving the quality of life of hypothyroidism patients before and after 6 months of yoga.

## METHODS

The study was a prospective randomised controlled trial. The study period was one year from December 2010 to November 2011.

### Inclusion criteria

All Adult patients aged 18 years and above of Hypothyroidism attending the medicine OPD and endocrine OPD or admitted in Medicine wards of SVBP Hospital, Meerut were included in the study.

### Exclusion criteria

Those patients who refused to participate in the study were excluded. Sixty patients who gave written informed consent along and who had mental and physical fitness up to a minimum level participated in the study and divided into two groups i.e. group 1 (patients undergoing yoga therapy) and second group 2 (not undergoing yoga therapy).

Details of the yoga practice was also given to each participant in the form of a Hindi Yog Pustika. Quality of life of all the patients were assessed by WHO QOL BREF document 7 in form of four domain scores. Domain score were calculated manually at baseline and after following up to six months.

### Statistical analysis

The data obtained was analyzed using SPSS software (Version 16.0). Unpaired t test and paired t test was to compare normal controls with hypothyroid patients.

## RESULTS

For the purpose of study, the participants were randomly allocated to either Group 1 (yoga group) and group 2 (control group). Out of 60 participants 56 participants completed the study. Table 1 shows that in group 1 out of 30 patients were enrolled and 29 patients (96.67%) completed 6 months follow up and in the Group 2 out of 30 enrolled patients, 27 patients (90.00%) completed their 6 months follow up. In which 19 were female and 16 male hypothyroid patients.

**Table 1: Patients of hypothyroidism enrolled and completing 6 months follow-up in yoga and control group with respect to gender.**

Group	Patients enrolled	Patients who completed 6 months follow up	
		Male	Female
Group 1 (yoga group)	30	10	19
Group 2 (control group)	30	11	16

Mean score of physical domain was  $12.03 \pm 1.02$  in Group 1 and  $11.56 \pm 1.05$  in group 2. Mean score of psychological domain was  $11.97 \pm 0.87$  in group 1 and  $11.93 \pm 1.11$  in group 2. Mean score of social domain was  $9.14 \pm 0.79$  in group 1 and  $9.00 \pm 0.96$  in group 2. Mean score of environmental domain was  $13.10 \pm 0.90$  in group 1 and  $11.93 \pm 0.87$  in group 2. There was no significant difference between the study and the control groups at baseline quality of life scores in any of the characteristics examined (p-value  $> 0.05$ ) (Table 2).

Table 3 shows that there is a significant improvement of 17.79% (paired t-test p-value  $< 0.001$ ) in mean physical domain score in the yoga group (group 1) at six months but of 1.21% in control (group 2) which was statistically insignificant (paired t-test p-value  $> 0.05$ ).

**Table 2: Baseline quality of life scores in hypothyroid patients.**

Parameter	Yoga group (group 1)	Control group (group 2)	P-value (independent t-test)
Mean score of physical domain (score out of 20)	$12.03 \pm 1.02$	$11.56 \pm 1.05$	0.089
Mean score of psychological domain (score out of 20)	$11.97 \pm 0.87$	$11.93 \pm 1.11$	0.882
Mean score of social domain (score out of 20)	$9.14 \pm 0.79$	$9.00 \pm 0.96$	0.559
Mean score of environmental domain (score out of 20)	$13.10 \pm 0.90$	$11.93 \pm 0.87$	0.089

**Table 3: Mean physical domain score at baseline, 3 months and 6 months follow up in hypothyroid patients.**

Group	Pre-study (mean domain score out of 20 at baseline)	At 3 months follow up (mean domain score out of 20)	Post study (mean domain score out of 20 at 6 months)	Mean difference	Difference in percentage	P- value within the group (paired t- test)
Yoga group (group 1)	12.03±1.02	13.14±0.83	14.17±0.89	+2.14	+17.79%	<0.001
Control group (group 2)	11.56±1.05	11.56± 1.12	11.70±1.14	+0.14	1.21%	0.327
P- value (independent t-test)	0.089	0.001	<0.001			

**Table 4: Mean psychological domain score at baseline, 3 months and 6 months follow up in hypothyroid patients.**

Group	Pre-study (mean domain score out of 20 at baseline)	At 3 months follow up (mean domain score out of 20)	Post study (mean domain score out of 20 at 6 months)	Mean difference	Difference in percentage	P- value within the group (paired t- test)
Yoga group (group 1)	11.97±0.87	13.17±1.10	14.17±0.89	+2.20	18.38%	<0.001
Control group (group 2)	11.93±1.11	12.00±1.27	12.04±1.06	+0.11	0.92%	0.611
P- value (independent t-test)	0.882	0.001	<0.001			

**Table 5: Mean social domain score at baseline, 3 months and 6 months follow up in hypothyroid patients.**

Group	Pre-study (mean domain score out of 20 at baseline)	At 3 months follow up (mean domain score out of 20)	Post study (mean domain score out of 20 at 6 months)	Mean difference	Difference in percentage	P- value within the group (paired t- test)
Yoga group (group 1)	9.14±0.79	9.03±0.50	9.10 ±0.67	-0.04	-0.44%	0.58
Control group (group 2)	9.00 ± 0.96	8.73± 0.73	8.96±0.94	-0.04	-0.44%	0.802
P- value (independent t-test)	0.559	0.37	0.58			

From Table 4, it is clear that there was a significant improvement of 18.38% (paired t-test p-value <0.05) in mean psychological domain score of the patients in the yoga group (group 1) at the end of six months. In the control group (group 2) patients, there was no statistically significant change from baseline value (paired t-test p-value >0.05). It was also evident from the same table that while at baseline, there was no statistically significant difference between the yoga and control groups (independent t-test p-value >0.05), the difference became significant at three months follow up and remained significant at the end of six months (independent t-test p-value <0.05). This can be attributed to the significantly beneficial impact of yoga on psychological aspect of QOL.

Table 5 shows the mean social domain score at baseline, 3 months and 6 months follow up in hypothyroid patients. Pre-study mean domain score was 9.14±0.79, 9.03±0.50 at 3 months follow up and 9.10±0.67 in post study mean domain score at 6 months in group 1. Pre-study mean domain score was 9.00±0.96, 8.73±0.73 at 3 months follow up and 8.96±0.94 in Post study mean domain score at 6 months in group 2. No significant effect of yoga on other aspects of quality of life in respect of social relationships was found (p-value >0.05) (Table 5).

Table 6 depicts mean environmental domain score at baseline, 3 months and 6 months follow up in hypothyroid patients. Pre-study mean domain score was 13.10±0.90, mean domain score was 13.28±1.00 at 3

months follow up and post study mean domain score was  $13.31 \pm 1.04$  at 6 months in group 1. Pre-study mean domain score was  $11.93 \pm 0.87$ ,  $11.96 \pm 0.76$  at 3 months follow up and post study mean domain score was

$12.00 \pm 0.88$  at 6 months in group 2. Environmental aspect of quality of life was not significantly influenced by yoga ( $p$ -value  $> 0.05$ ).

**Table 6: Mean environmental domain score at baseline, 3 months and 6 months follow up in hypothyroid patients.**

Group	Pre-study (mean domain score out of 20 at baseline)	At 3 months follow up (mean domain score out of 20)	Post study (mean domain score out of 20 at 6 months)	Mean difference	Difference in percentage	P- value within the group (paired t- test)
Yoga group (group 1)	$13.10 \pm 0.90$	$13.28 \pm 1.00$	$13.31 \pm 1.04$	+0.21	1.60%	0.110
Control group (group 2)	$11.93 \pm 0.87$	$11.96 \pm 0.76$	$12.00 \pm 0.88$	+0.07	0.58%	0.646
P- value (independent t-test)	0.089	0.056	0.110			

## DISCUSSION

Present study assessed the quality of life on four different domains, i.e., physical, psychological, social and environmental, using the WHO-QOL BREF questionnaire.<sup>7</sup> Each domain represents a particular aspect of quality of life. Hypothyroidism is known to increase the level of stress, emotional vulnerability, inactivity and muscle weakness. Yoga techniques are particularly suited for promoting relaxation, psychomotor stability, and exercise tolerance. Thus, by improving the strength and endurance of ventilator muscles through yoga, onset of ventilatory muscle fatigue could be delayed which could then lead to improvement of physical performance.

Ventilatory muscle fatigue could be a cardinal limitation for human performance in sports, mountaineering, and vigilance in high altitude areas. Prior training of ventilatory muscles with the help of yoga might improve the performance in these areas or prevent further deterioration. Regular yogic practices result in improvement in MVV. This increased ventilatory endurance in turn might be beneficial in augmentation of human performance where strength and endurance of respiratory muscle play pivotal role. A study on effect of yoga on different aspect of mental health done in Patanjali Research Foundation, Haridwar (2012) shows a beneficial effect in decreasing anxiety, somatization of stress and discomfort, improvement health related quality of life and sleep quality.<sup>8</sup> A disease never comes alone, it is often associated with plethora of other problems. It not only causes upheaval in the patient's social life but also financially draining at the same time. Present study brings out the multidimensional role played by yoga in patients suffering from hypothyroidism. In the present study, used WHO QOL-BREF questionnaire (field trial

version December 1996) developed by the World Health Organization to assess the quality of life.<sup>7</sup> It was observed in the study that there is a significant improvement of 17.79% in the physical aspect of quality of life of patients in the yoga group at the end of six months as compared to the patients in the control group. Significant improvement of 18.38% was also observed in the psychological aspect of quality of life of patients in the yoga group at the end of six months as compared to control group. However, there was no significant change in the social and environmental aspects of quality of life at six months with yoga therapy. Further, studies may be done over longer period of time to study the impact of yoga on these aspects of life.

In another study by Singh P et al, patients' quality of life scores following the yoga program were greater than scores obtained prior to undertaking yoga ( $p < 0.01$ ). Patients also reported significant improvement in their perception of the overall quality of life and of their health post yoga intervention.<sup>9</sup> This is similar to present study results. Yogic techniques are known to improve one's overall performance and work capacity.<sup>10</sup>

## CONCLUSION

There is a profound improvement in physical and psychological domains of quality of life of hypothyroid patients and evidences fruitful in establishing the positive role played by yoga. However, further studies over longer period of time may be helpful to evaluate the effect of yoga in these aspects of life.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Akhtar J. Role of yoga in improving quality of life of hypothyroidism patients. *Int J Adv Med* 2019;6:341-5.