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Impact of yoga on patients suffering with hyper and hypothyroidism

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Abstract

The objective of the study is to find the impact of Yoga on the WHO Group QOL (Quality Of Life) of Hypo, Hyper and TSH patients. A study design of pre and post test is used for data analysis is used. The WHO suggested scale is used with modifications to assess 90 patients out of 1000 no. to study the domain of general quality of life. Patients followed 60 minute yoga practices daily in the morning for 6 days/week for 12weeks. The suggested yoga techniques are like Kapalabhati, Ujjai, Sarvangasan, and Halasan. Patients who underwent yoga practices showed significant improvement ($p < 0.0001$) in their thyroid levels and with a general perception of overall quality of life. It can be concluded that yoga is a valuable alternative therapy in helping the thyroid patients to manage their disease symptoms and its cure with over all better quality of life.

Keywords: Thyroid disorders, yoga therapy, quality of life, health

1. Introduction

Thyroid gland is located at the base of human neck affront of our trachea (or windpipe), which secrete, store and release thyroxin (T3) and triiodothyronine (T4) hormone. Any imbalance (too much or less amount) in amount releasing of these hormones affect the metabolism, resulting hypo and hyperthyroidism disorders [1]. The prevalence and management of these thyroid disorders varies widely according to geographical distribution, diet and nutrition and patient population. According to the literature, autopsy rates ranging from 0.03% to over 2% have been reported [2] (Louise *et al.*, 2006). It is reported that a 2.8% prevalence rate with metastatic neoplasm with secondary tumors to the thyroid gland and on 1000 consecutive patients of thyroid carcinoma in routine autopsies [3]. Apart from medical reasons, there are other psychological reasons which could be depression, anxiety, stress, mood swing etc. The burden of thyroid disorders in the general population is enormous. Hypothyroidism is one of the most common endocrine disorders, with a greater burden of diseases in women and the elderly (Canariset *et al.*, 2000). It is responsible for regulation of oxygen use, basal metabolic rate, cellular metabolism and growth and development [4]. According to a recent projection from various studies, it has been estimated that about 42 million people (about 4.21%) in India suffer from thyroid diseases. About 1 to 2% of the adult population is known to suffer from thyroid disorders [5]. The need to combat this dysfunction has risen in recent years due to its increasing prevalence. The thyroid hormones are transported through the blood and act at the cellular level. The decreased levels of thyroid hormone lead to hypothyroidism. Hypothyroidism presents with symptoms such as dry skin, decreased sweating, myxedema, puffy face with oedematous eyelids, non pitting pretibial edema, pallor, retarded nail growth, dry brittle hair, constipation, weight gain, decreased libido and menstrual disturbance menorrhagia in common oligomenorrhoea or amenorrhoea in long standing cases. Hyperthyroidism is caused as a result of excessive thyroid function often hyperthyroidism is considered synonymous with thyrotoxicosis (a state of thyroid hormone excess). However, Thyrotoxicosis is usually secondary to Graves' disease, toxic multinodular goitre and toxic adenomas. Hyperthyroidism presents with exophthalmoses, increased BMR, hyperactivity, Dysphasia, irritability, muscular weakness nervousness, palpitation, Fatigue, weight loss with increased appetite diarrhoea, polyuria, warm moist skin and tremor [6]. The management of thyroid disorders is also a problem to be addressed, though there were reviews available

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[7]. There is no systematic attempt has been made so far as to examine the effect of combine graded yogic training on pituitary –thyroid axis [8]. However, the study was carried out by these authors for the aged and elderly communities. Therefore, in the present study an attempt has been made to observe the effect of combine graded Yogic therapy techniques on the patients suffering from disordered level of TSH, T3 and T4 hormones. WHO quality of life scale is used to assess the general quality of life of the selected thyroid disorder level patients in this study [9]. In addition, other questionnaire was also referred to develop the self report questionnaire [10].

2. Methods

2.1 Participants

Ninety male and female (aged 38 ± 5 years) thyroid patients are selected out of 1000 from the hospital. The selection was based on their willingness and cooperation to participate in the experiment. The participants' health conditions are periodically checked as a part of the regular check up. All subjects were submitted to conventional yoga and kept to the same daily work conditions. All subject were assigned to either yoga practice or conventional Om chanting (control) Group balanced for age and in patients the yoga group ($n = 45$) attend 6 yoga classes a week plus 5 Om chanting classes, while the control group ($n = 45$) attend only Om chanting (5 class a week) for 3 months all classes 60 min. Outcome assessments were performed at baseline and at the end of the 3 month period.

2.2 Inventories

These evaluations consisted of standard inventories, T3, T4, TSH levels. Apart from the thyroid interventions, the BMI is also measured at regular intervals. Both collection and data analysis were conducted blind to the experimenter.

2.3 Statistical analysis

The statistical package for social sciences (version 25.0) was used to conduct statistical analyses. A single and pair (pre – post data) sample's' test was conducted to find the pair differences. A significance level of 0.001 with a confidence interval of 95% was considered to reflect significant differences made in this study.

2.4 Yoga therapy

The following four Yoga therapy techniques may be adopted in reducing or increasing the thyroid T3, T4 and TSH levels to standard reference levels [11, 12].

- **Kapalabhati (passive inhalation and active exhalation):** Sit on the floor in a comfortable cross legged position. Take a deep breath and then exhale quickly, while making a sound. In other words, it is a forcible exhalation with passive inhalation. Repeat the process 10 times.
- **Ujjai (making sound while inhalation):** It is a diaphragmatic breath, which fills lower belly, rises to the lower rib cage and finally moves to the chest and throat. Sit on the floor in a comfortable cross legged position. Inhale slowly and deeply by both nostrils. Remember that throat gets contracted while doing so. – Repeat the process 10 times.
- **Sarvangasana (Whole body exercise):** First lie down on a mat and rest your back on the floor. Then you have to

try to lift your legs in the upward direction. You can take the support of hands for the same. Try to rest your hands on your back so that they can help you to remain in the steady position. Once legs are up in the air, try to bring them in a straight alignment with the body and stretch as much as one can – Stay in this position for 30 seconds and repeat, if you can.

- **Halasana (Plow posture):** Come to sarvangasana position and then try and bring legs downwards from over your head. Again here, rest the palm of your hands on your back in order to support your position. Remain in this position steady for about 30 seconds: count your breath and then release.

Note: All the above exercises are to be done under the guidance of a Yoga expert. Predominantly, the above 4 yoga techniques are suggested, though others recommend other additional techniques also [13].

The above protocol may be carried out for 3 months including follow up of all the yogic practices. Patients who are suffering from heart ailments and back pain are not recommended to do the above yoga practices.

3. Results

3.1 Inventories

All the subjects of the study have improved either by compliment reduction or care from thyroid disorder. The observations were compared by using paired 't' test is used. It is a test for judging the significance of a sample mean or judging the significant of difference between the mean of two samples in case of samples in case two samples are related, the paired t test is used for judging the of the deference between the mean of tow related samples. The t- test is based on t- distribution is a continuous probability distribution that arises when estimating the mean of normally distributed population. The significance of the result is assessed by considering $p < 0.001$ as the level of significance. The difference is considered highly significant if $p < 0.005$. The values of statistical analysis of data are given in the Table 1, 2 and 3 for Hypo (T3), Hyper (T4) and TSH levels. Data obtained after yoga intervention through the thyroid ailments along with BMI showed that most of the subjects from both groups presented follow the WHOHQ information data. Modified WHOHQ data after yoga practices are measured and are shown in Table 4. Moreover, comparison between the GHQ and yoga scores showed a significant increase for yoga group ($p < 0.001$) with 95% confidence interval.

Table 1: Significant levels of T3

Test	Mean level	BMI
Pre	4.2809	29.87
post	1.1020	21.90

Table 2: Significant levels of T4

Test	Mean	BMI
Pre	12.1249	29.87
Post	7.6739	21.90

Table 3: TSH levels

Test	Mean	BMI
Pre	0.126	29.87
Post	3.3513	21.90

Table 4: Yoga with WHO-QOL

Test	Mean data			Observations
	T3	T4	TSH	
WHO-QOL Yoga	4.6944 1.1089	7.6162 7.6039	4.7222 3.4925	General quality of life values are greater because of extra WHO protocols

4. Discussion

In the present research study, the result of experiment group was proved to be statistically significant. Every member felt improvement after the yoga therapy programme. But there was no improvement among control group subjects. In the subjects with T3, T4, TSH and BMI, experimental groups, after 3 months of yoga practice the symptoms like weight gain, sensitive to cold, tremor in hands, abnormal hair loss, excess menstruation bleeding, cramps, fat, constipation, depression may be reduced. At the end of the study, the subjects (with T3, T4, TSH) in the experimental group have shown significant improvement in the thyroid function and with normal BMI ratio. The result concluded that, there is significant decrease in the tri iodothyronine (T3) level from 4.28 to 1.1, at a level of significance $p < 0.001$, Thyroxin(T4) at a level of significance $p < 0.001$ from the mean value 12.12 to 7.67, Thyroid Stimulating Hormone TSH level of significance $p < 0.001$ from the mean 0.1261 to 3.3513. The BMI ratio has reduced from 29.87 to 21.90. But in case of the subjects (with T3, T4, TSH and BMI) in the control group have shown no significant values. WHO quality of life (WHOQOL Group Quality of Life Res, 1993) has five broad domains of instruments covered in our 'self report' thyroid questionnaire. Validity and reliability of the scale is tested and retested. These domains are;

1. Physical health (body states and functions)
2. Psychological health
3. Level of independence
4. Social relationships and
5. Environment

The general improvement in the quality of the life is reflected in the form of symptoms like weight reduction, abnormal hair loss, excess menstruation bleeding, cramps, fat, constipation, emotional depression may be reduced (Table 4.)

5. Conclusions

The present study shows the efficacy of yogic practices in treating the thyroid disorder levels and its management by regularly practicing the yogic techniques. Thyroid disorders are not a disease but a syndrome which can lead to multiple problems and thus making the life miserable. Though it is not cured, but can be managed effectively through Yoga therapy. Regular practice of yoga and diet can lead to a better quality of life and physical and mental wellness. The WHO QOL covers the domain of environment which plays an important role in most of the thyroid disorders which occur in most parts of the world. Our study on thyroid disorders and its cure and management through Yoga therapy has a better scope and prospects for further study of the problem at the global level.

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