



Review Article

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CURRENT RESEARCH UPDATES ON THE MANAGEMENT OF HYPOTHYROIDISM BY AYURVEDA: A SYSTEMATIC REVIEW

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ABSTRACT

Hypothyroidism is one of the challenging disorders and the burden of this disorder has been growing. The prevalence of the hypothyroidism is 11% in India. This is alarming situation, and it has made many researchers to find solutions in Ayurveda. There are many research articles published on the diagnosis & management of Hypothyroidism as per Ayurveda. It was needed to update the Ayurvedic drugs, procedures proved efficacious in the management of hypothyroidism. Therefore, we made a literature search using certain keywords in various search engines. Total 12 research articles, case studies/series were included. They were summarized, analyzed for search results, and concluded that most of the studies on Hypothyroidism had too low sample size. Secondly, there should be multicentric clinical trials of Ayurvedic drugs. It is also needed that; the research should be done on, if the Ayurvedic medicines to surpass the research on modern medicines for hypothyroidism or can be prescribed as supplementary medication.

Keywords: Hypothyroidism, Ayurveda, Review

INTRODUCTION

Hypothyroidism is one of the growing health problems in Indian population. The prevalence of Hypothyroidism in India is 11%, compared to only 2% in UK and 4.6% in USA¹. The prevalence of Hypothyroidism is higher in the females than in the Males. The hypothyroidism is mainly diagnosed as primary Hypothyroidism. Hypothyroidism affects many other illnesses such as Diabetes Mellitus, Cardiac diseases, diseases of reproductive system etc. An uncontrolled Hypothyroidism² can contribute to hypertension, dyslipidemia, infertility, cognitive impairment, and neuromuscular dysfunctions. Clinical symptoms of hypothyroidism are nonspecific and may be subtle especially in older person. It affects the metabolism of the body at cellular level. The reason¹ behind the higher mean thyroid-stimulating hormone concentration and range in India compared with western countries is possibly linked to long-standing iodine deficiency in the country. Iodized salt production has increased by almost nine times in the past two decades – from 0.7 million metric tons per year in 1985-86 to about 6.2 million nowadays. Despite an increase in iodized salt consumption, national coverage was 51% in 2005-06 and 71% in 2009. Even now, there are two major factors- poverty and inability of consumers to assess the quality of salt they purchase- that hinder iodized salt consumption in India, thereby putting many people at risk of iodine deficiency.

Though, there is no direct description of the thyroid gland and its functions in Ayurveda, the Dosha-Dhatu-Mala theory of Ayurveda can describe the disease and its treatment principles. This disorder can be categorized as a Kapha Prakopa or Kapha – Vata Prakopa (disease due to vitiation of Kapha or Kapha and Vata Dosha). Galaganda, Gandamala and Shopha can be one of the diagnoses as per Ayurveda.

The management of this disorder from Ayurvedic point of view is also essential to assist the conventional treatment to decrease the burden of this disorder. Some researchers have described the pathophysiology and the treatment principles of this disorder as per Ayurveda. While some have reported case studies or case series. Some researchers have also conducted clinical trials of Ayurvedic formulations. There are some reviews on management of hypothyroidism, but they are not updated. So, the recent review was needed.

We made search of electronic literatures from various search engines like Google Scholar, PUBMED, AYUSH research portal and sorted and summarized all the articles. Total 12 papers were selected and analyzed based on inclusion and exclusion criteria, interventions, and results. Later, we analyzed the findings and tried to infer on the findings. This systematic review was aimed to generate new insights to the research in the field of management of hypothyroidism in Ayurveda. For that purpose, the literature related to the subject was summarized and organized to analyse and generate research questions.

Search strategy

We searched electronic records for the work done in past on this topic. We made search by the keywords “Hypothyroidism and Ayurveda”, “Hypothyroidism in India” in the various search engines like Google Scholar, PUBMED, AYUSH research portal, clinical trials registry of India. We got all the types of articles such as research articles, review articles etc. only research articles, case studies/series were included. Review and conceptual studies were excluded.

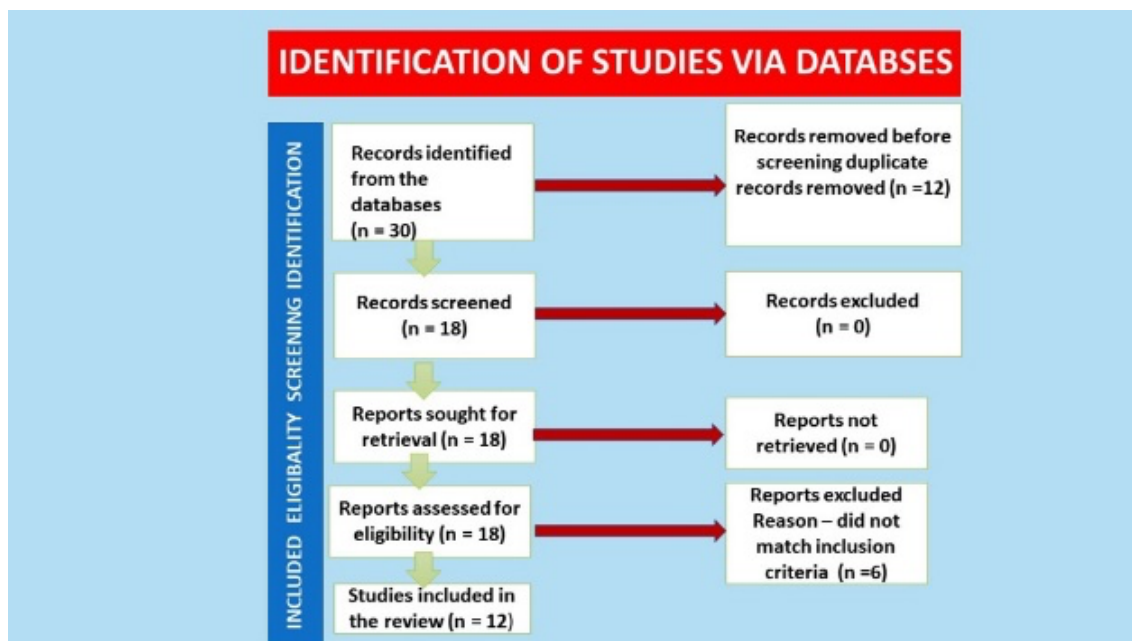


Figure 1: Search strategy

Table 1: Literature matrix Ayurveda in Hypothyroidism

Author	ST	SS	Place	Incl. & Excl. Cri.	Intervention	Results
Ashok Kumar Sharma, ⁶ Indraneel Basu (2018) J Altern complement med	RCT	50	Sudbhawana Hospital, Varanasi	Age -18 – 50 Elevated TSH 4.5 -10 µIU/L	Trial gr. (n = 25) Ashwagandha root extract 600 mg daily Placebo Gr (n = 25) Starch 8 weeks	Total 4 subjects (2 from each group) withdrew their consent. Ashwagandha improved serum TSH, T ₃ and T ₄ significantly compared to placebo. Ashwagandha treatment effectively normalized the serum thyroid indices in 8 weeks significantly. 4 subjects (1 Ashwagandha, 3 placebo) showed mild and temporary side effects during the treatment.
Karishma Singh, ¹¹ Anup Thakkar (2018) Ayu journal	CS	15	Panchakarma OPD IPGTRA Jamnagar	Diagnosed cases on TSH, T ₃ , T ₄ levels Puffiness of face& eyelids, peripheral edema dry coarse skin. Breathlessness, constipation, weakness, lethargy, fatigue, menstrual abnormality, hair loss Age – 20 -60 years Exclusion patients with myocardial infarction, ischemic heart disease, uncontrolled HTN etc.	Triphaladhya Guggulu 500 mg, 2 Vati with lukewarm water twice a day after meal and Punarnavadi decoction 30 ml twice a day before meal 45 days	In overall effect of therapy, excellent improvement was observed in 33.33% of the patients, while marked improvement was seen in 53.33% patients. Moderate improvement was seen in 6.66% of the patients and same number of patients that is 6.66% showed mild improvement. Moreover, few interesting observations noted 4 months after completion of the trial. Out of 15 registered patients, 86.66% had positive drug history for Levothyroxine. After clinical trial 6.66% of the patients continued their previous dosage of levothyroxine, while 80% of the patients had withdrawn their hormone replacement therapy.
Das Nabnita, ³ Choudhary Kuldeep, Goswami Kanika (Int J Ayu Pharma research 2018 ISSN: 2322 – 0910)	RCT	60	Government Ayurvedic college & hospital, Guwahati – 14, Assam	All hypothyroid patients with TSH ≤10 ml/µl Exclusion Critically ill patients	Group A – 30 patients Trikatu Churna as supplement with the diet (1.5 gm - 3 gm for 90 days) of the patient along with dietary advice specific for hypothyroidism Group – B – 30 patients	In all patients treated with Trikatu Churna there is decrease in the symptoms and serum TSH as well however results not statistically significant in compared to hormone replacement therapy

					Conventional treatment with thyroxine sodium (1.6 µgm/kg/day)	
Himanshu Kanzaria, Alankruta R Dave, Yogesh Manani ⁷ et. al EJBPS (2017)	RCT	15	IPGTRA Jamnagar	Age – 16 -60 TSH > 4.31 µIU/ML Low serum T ₃ (T ₃ < 0.79 ng/ml) Low serum T ₄ (T ₄ < 4.9 - 11µg/dl) Exclusion Goiter Drug induced hypothyroidism Systemic illness like tuberculosis CNS disorders e.g., Encephalopathy Major disorders like goiter, other endocrine disorders, HIV, cardiac disorders, malignancies, and renal failure	6 Vidanga Vati (each contains only Vidanga Churna 340 mg was given thrice a day after meal with Lukewarm water for 8 weeks Before starting treatment, patients were asked to stop medicines before 2 weeks Follow up – for 15 days interval for 4 weeks	Vidangadi Vati showed 21.93% reduction serum TSH was statistically significant. Vidanga promoted as a weight loss agent supposedly enhances thyroid functions.
Lines Wala Gaurang, ¹⁰ (2002)	RCT	14	IPGTRA Jamnagar	Hypothyroidism	Group A 1.Vamana Karma 2.Bhallataka Vati 2gm thrice with milk 3.Galagandahara Vati 2 gm thrice with milk 2 months Group B 1.Bhallataka Vati 2gm thrice with milk 2.Galagandahara Vati 2 gm thrice with milk 2 months	The group A showed statistically significant results than group B
Padmini, ¹⁴ Ananta Desai, Ahalya Sharm	CS	1	Dept of PG Panchakarma, SJIIM Bangalore	f/25, healthy before 1 yr. fatigue, generalized edema, severe pain below ankle TSH 31.43. marked increase in body weight from 70 kg to 83 kg.	23/4 – 25/4 Deepana- 2 days Chitrakadi Vati 2-tab TID, 26/4/18 - Varunadi Ghrita 25 ml,50 ml, 75 ml.100ml, 125 ml Vishram, 1/5/18 Sarvanga Abhyanga Triphaladhya Taila fb Bashpa Sweda 2/5/18 Vamana Karma and Shamana	Reduced weight to 79 Kg, fatigue and tiredness reduced significantly. TSH reduced to 5.832 unit/ml (before 22.282 unit/ml)
Pratiksha ¹² Patairiya, M.S. Baghel, Anup Thakkar (2014)	NA	43	Panchakarma Dept IPGTRA Jamnagar	Hypothyroidism	Group A – (n = 10) 3 -6 Pippali 6 weeks Group B (n = 10) Shodhana 3 -6 Pippali 6 weeks Group A (n =15) 1.Vamana Karma 2. Punarnava – Amruta – Guggul – 1 gm T.i.d. with Lukewarm water 45 days Group B (n = 15) 1. Virechana Karma 2. Shamana 1 gm t.i.d. with Lukewarm water 45 days Group C (n = 13) 1. Levothyroxine 45 days	In the observation on total effect of the therapy group A found moderate improvement in 4, mild improvement in 8 and 3 unchanged, while in group B 2.8,4 in respective categories and 2,0,11 in group C thus, Group A found better results in compared to Group B and Group C.
Mali Anjali, ⁹ Anup Thakkar, Manish Mehta (2011)	NA	42	IPGTRA Jamnagar	Hypothyroidism	Group A (n = 15) 1. Vamana-Virechana 2. Vardhanaman Pippali Rasayana 30 days Group B (n = 12) Levothyroxine sodium 2 months Group C (n = 15)	Group A showed statistically significant results

					Vardhamana Pippali Rasayana 30 days	
Deb Jyoti das ⁸ et al. (Int journal of development research 2021)	CS	1	OPD, CRIDD, Kolkata	A f/22 puffiness, lethargy, hoarseness of voice, loss of hair, weight gain, poor memory, infertility, - 1 year TSH 9.51 mIU/ml	1. Kanchanar Guggul 250 mg 3 times with lukewarm water after meals, 2. Trikatu Churna 2 gm 2 times with warm water, 3. Vidanga Churna 3 gm 3 times 3 months	All the symptoms disappeared. TSH decreased to 2.84 unit/ml
Karishma ⁵ Singh, Adil Rais, Anup Thakkar (Ayu - 2019)	CS	1	NA	A 27 old female with pain in inter phalangeal joints, with other multiple joints history of bilateral upper limbs with morning stiffness - 1 year, decreased appetite, constipation, lethargy etc.	Koshtha Shuddhi Gamdharvahastadi Eranda tailam 15 ml at bedtime Shiva Kshara Pachak Churna 3 gm TDS Shunthi Siddha Jala 5 days Kshara Basti contents 1. Saindhav - 1 gm 2. Guda - 100 gm 3. Amlika Kalka - 100 gm 4. Shatavha Kalka - 10 gm 5. Gomutra - 400 ml Basti - 5 days	100% relief in joint pain Constipation relieved Appetite improved Lightness in the body feeling of healthy Serum TSH decreased BT-31.1, AT 16.6 AF-5.76 µIU/ml, serum T ₃ , T ₄ increased BT - 1.38, AT-0.95, AF- 1.91 ng/ml, Serum T ₄ - BT- 5.44, AT-4.71, AF - 7.36 µg/dl
Kaur Jagmeet, ¹³ Chauhan Milan (Int J Ayur Pharma res (2014))	CS	1	Jammu Institute of Ayurveda and research, Jammu	A F/45 having swollen body, puffiness of face, hoarseness of voice, lethargy, general debility, hair fall constipation - 3 months	Tab Kanchanar Guggul 2 TDS with lukewarm water Varunadi Kashay 15 ml TDS Trivirta Avaleha 1 TDF BT with lukewarm water Initially 15 days later 15 days	Serum TSH BT - 13.78 UIU/ml AT -9.99 UIU/ml Reduction in the symptoms seen. Kanchanar Guggul was continued till 6 months.
Lines Wala Gaurang ⁴ , Gurudip Singh Behera BS (Journal of Ayurveda physicians and surgeons (2018))	CS	7	IPGTRA Jamnagar	Puffiness weight gain, edema, anorexia, generalized pain	30 gm ghee given in morning 7 am, on the next day 30 -50 gm ghee was given. It continued till Samyak snehana was obtained. Then sarvanga Abhyanga with Bala Taila followed by Bashpa Sweda. Then Vamana and Sansarjana. Symptoms assessed again	28.6% moderate overall improvement, 71.4% mild improvement

Table 2 Interventions Ayurveda in Hypothyroidism

Panchakarma	Single drug formulations	Multi drug formulations	Decoctions	Vati
Vamana Virechana- castor oil, Trivritta Avaleha Kshar Basti	Ashvagandha extract, Vidanga, Trikatu, Vardhaman Pippali	Trifaladi Guggul, Punarnava - Amruta Guggul, Kanchanar Guggul,	Punarnavadi Kashay, Varunadya Kashay	Galagandaharha Vati Bhallataka Vati

The recent research articles (not more than 20 years old), case study or case series were included in the study. Those articles in which only Ayurvedic intervention (not in combination with yoga or other therapy) is used to treat the hypothyroidism were included. Initially, 30 research papers were identified. 12 were excluded as identified as duplicate entries. Further 6 entries were excluded as they did not satisfy the inclusion criteria. Thus, total 12 papers were included in the study irrespective of the results to avoid the bias. Thereafter, the records were summarized and organized (Figure 1 search strategy), (Table 1 Literature matrix

Ayurveda in Hypothyroidism) (Table 2 Interventions Ayurveda in Hypothyroidism) and then analyzed them to reach to the conclusion. Out of 12 selected articles, there were 4 Randomized controlled clinical trials (RCTs), 6 were case study or case series and 2 did not mentioned study types. The highest sample size was 60, by Das Nabnita³ et. al.

Most of the studies considered the hypothyroidism as Galaganda a Kapha dominant disorder of the upper body. The treatment was given Shodhana and Shamana. Among the Shodhana, Vamana⁴

more frequently used thereafter Virechana, however, in one case Kshara Basti⁵ was also administered. Among the Shamana type, various researchers treated the Hypothyroidism with single herb formulations like Asvagandha⁶, Vidanga⁷, Trikatu^{3,8} (mixture of Shunthi, Pippali and Maricha) Pippali⁹ separate and Bhallataka¹⁰.

Among the multi herb formulations, Galagandahara Vati¹⁰, Triphaladi Guggulu¹¹, Punarnavadi decoction¹¹, Punarnava-Amruta Guggulu¹², Kanchanar Guggulu¹³, Varunadi Kwatha¹³ etc. were used.

Hypothyroidism is a major disorder among the disorders of endocrine system and as the thyroid gland is responsible for controlling various systems of the body. Its hypo secretion affects various systems of the body. As hypothyroidism may have varied presentation, the Ayurvedic management can be different in the different situations. Among the 12 papers, only one researcher reported negative findings. Das Nabnita³ *et al* reported negative findings and interestingly, the highest sample size i.e., 60 was utilized in this study among all the studies included in this review.

Various researchers contributed on the management of the hypothyroidism, but Karishma Singh and Anup Thakkar¹¹ observed that, out of 15 registered patients, 86.66% had positive drug history for Levothyroxine. After clinical trial 6.66% of the patients continued their previous dosage of levothyroxine, while 80% of the patients had withdrawn their hormone replacement therapy. This observation is remarkable since the patients of hypothyroidism are always concerned about consuming the hormonal replacement therapy for lifelong.

However, looking at the prevalence rate of Hypothyroidism in the Indian population, more clinical trials with large sample size, multi centric trials are essential. The role of various panchakarma, Rasayana to prevent and treat the hypothyroidism is needed.

CONCLUSION

There is research done on management of hypothyroidism by Ayurveda, however, the studies have too low sample size. Therefore, studies with more sample size should be carried out. There can be multi centric trials. It can be confirmed that, if the Ayurvedic formulations are efficacious as independent drugs in hypothyroidism or they can be used only as supplementary to the conventional drugs.

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