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Short Review Paper

Implementation of the vegan diet among obese hypothyroid housewives living in metro cities – A review

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Abstract

Hypothyroidism is one of the major health issue often associated with overweight or obesity among sedentary women. Recent studies showed that approximately 10.95% of women are suffering from mild or moderate hypothyroidism and 8.0% are from subclinical hypothyroidism in India. Since last 5 years, numbers of hypothyroid women who are also associated with obesity and other comorbidities have been rising at very fast. Most recommended western medicine, Levothyroxine is very popular and applied therapy by physicians or endocrinologists keeping in mind about the contraindications for long term treatment. The best probable ways are changing the lifestyles along with healthy and proper diet devoid of toxic chemicals i.e. endocrine disruptors. This study can provide some overview of the best possible diet plans made upon safe and effective low-calorie foods to combat obesity which is also positively correlated with hypothyroidism. The study focuses mostly on used diet types in India by sedentary women whether belonging to the middle class or upper-class families primarily for weight loss which may control thyroid-stimulating hormone and thyroxine hormone both or vice-versa. Every typical diet has a specific role on specific health issue although diet as an organized meal plan by counting the calorie, often considered a hypothetical therapy in addition to the western treatment protocol. So 'food as medicine' approach could be similarly helpful for obese hypothyroid patient mainly living in metro cities in India.

Keywords: Vegan diet, hypothyroidism, obesity, endocrine disruptors, diet types.

Introduction

Thyroid diseases are very common in the list of endocrine disorders which often affect the entire endocrine system of a human body. The stage of HT may be subclinical or mild to moderate or very rare cases Myxedema in India. Millions of people all across the world are somehow facing the endocrine problems and as per data, above 40 million are Indians[1-2]. The studies found the incidence of hypothyroidism in 8 major cities of India was 10.95%. As per recent studies, Indian females were more prone to this health issue than males (15.86% vs. 5.02%) and the comparison between old-age and young-age people was above 13% and 7%. A total of 22% of Indian citizens were detected positive significantly in terms of anti-TPO antibodies[3]. A study also showed the prevalence of HT was 3.9%; out of which 53% of patients were suffering from subclinical hypothyroidism (anti-TPO antibodies positive)[4]. Endocrine abnormalities, mainly hypothyroidism, diabetes are very common among obese women all over the world and India is one of the major examples. Few studies showed that apart from thyroid disorders, menorrhagia, metrorrhagia, PCOD, hyperinsulinemia, and other genetic or auto-immune disorders often closely interlinked with obesity[5]. So in most of these health issues, basic preventive therapy should be weight loss with the help of low-calorie proper diet. Although the reasons for obesity almost understood that because of sedentary lifestyles, more consumption of high-calorie foods through junk foods and on the contrary no such exercises to burn the unwanted consumed calories[6-7]. In spite of scanty data, few reports and studies found that some chemicals as toxins which are termed as endocrine disruptors or thyroid disruptors, majorly responsible for hypothyroidism. Nowadays iodine deficiency cases are very low because India has already changed its phase from iodine scarcity to enough-iodine among the Indian population for the last few decades. Hence as per data, Iodine is not only the major cause of hypothyroidism but other important factors are also responsible[8-9]. Proper nutrition through proper foods are very important for these kind of patients. Hence, the diet plans for this concern may be based on the very popular diet types which are Atkin, Dukan, Paleo, Keto or simply the generic types like vegan or ovo-vegetarian, non-vegetarian and few more.

Methods

In this review study, the literature-based analysis was done with the help of the published results from high-quality observations, experimental studies. The included-studies analyzed the effect of follow up of both vegan and non-vegan diet types for health issues like obesity and hypothyroidism and other comorbidities. An electronic search of Pub Med, Cross Ref, Google Scholar database from the year 2000 till 2016 were included by using

keywords 'Vegan diet', 'Hypothyroidism', 'Obesity', 'Endocrine Disruptors', 'Diet Types'. The search function was performed to extract the related articles and reference lists from research, reviews, and other popular web pages. Only the English language was used during the entire process.

Results and discussion

I focused mainly on the vegan diet in addition to other common diet types practiced by Indian people. In general, HT affected women mainly housewives should avoid animal products like red meat, mercury rich fishes and cruciferous vegetables like cabbage, cauliflower and on the contrary they can consume other vegetables like gourds, roots and fresh sea foods. In Indian markets, fresh seafood is mainly available in coastal areas but non-coastal area-based people also can consume if fresh available in the local markets and subsequently properly cooked. So a typical vegan diet or vegetables based diet could be helpful for both obesity and HT considering safer due to detox and low-calorie in nature[10,11]. However, all types of the diet which are devoid of EDC and some chemicals toxins may be helpful but a vegan diet is experienced more effective because the diet type is true to be related with a less but not high risk of hypothyroidism[11].

Typically, a vegetarian diet should contain enough grains and pulses, nuts and seeds, dairy foods, vegetables and fruits and sometimes honey. As per the vegan diet, dairy, eggs, honey should not be included in the plate in some families but the Indian families practice vegan diet, exclude only egg because the source is an animal[12]. A completely fruit-based diet is called a Fruitarian diet which is not so popular worldwide but people like Jains in India often practice fruits consumption 75% of total foods (kcal) on a day for a few days as a ritual. This kind of diet not suitable for all because weakness is a common sign of this dieting practice[13]. Ovo-vegetarian is another type of diet practice which means the addition of egg to a vegan diet but no other animal and dairy sourced foods. In some traditional Indian families, dairy foods are considered animal-based due to the sources. At the same time, Ovo-Lacto vegetarianism shows a vegetarian diet with eggs and dairy foods in daily meals[14].

One article reviewed that the major nutrients for vegetarians should be included 1st class protein, all B-Vitamins, Omega-3-6-9 fatty acids, linolenic acid, docosahexaenoic acid along with eicosapentaenoic acid for better cognitive and brain functions. Most importantly vegan assured iron as a source of hemoglobin, zinc for development, iodine for thyroid functions, calcium and vitamins D for bones and cartilages. The review studies showed that typical veg diets or precisely a vegan diet can provide sufficient nutrition in pregnancy and post-pregnancy and ensures overall good infant health outcomes[15]. A vegan diet provides enough rather more soluble as well as insoluble fibers which are essential for healthy cardiovascular functions, laxative action. Further maintains healthy skin, eyes, hair due to enough presence of retinol, ascorbic acid, B-Vitamins all. The vegan diet is devoid of animal products, so low saturated fat and trans-fat more unsaturated fat from edible oil (vegetable oils). As a result, people are low in risk in terms of adipose tissues and bad cholesterol. Detoxification quality of the vegan diet assures less production of visceral fat in the body even in housewives living in urban population. Therefore getting the low risk of obesity or overweight from home-based foods by vegan diet implementation[15-16]. The study also reviewed that plant-based food low in iodine due to poor concentration in soil. 25% of vegetarian people and 82% of the total non-vegan population are affected by hypothyroidism (value of Iodine <100 micro/l) compared to 10% of persons who practice other dietary habits, as for examples-Ketogenic, Atkin etc. In recent studies in India, fewer numbers of HT cases observed due to Iodine but as a whole which is not at all criteria or reason in the urban areas[16,23]. A study in America (Boston area) showed vegan women of age group 21 years to 40 years should have been supplemented with approximately 150-180µg iodine daily. Perchlorate due to environmental issues and other endocrine disruptors including thiocyanate were not related to hyper or hypothyroidism in this population in the USA during that decades. In reality, hypothyroidism was one of the reasons due to Iodine deficiency in urban areas 10-20 years back[17]. Concerning the staple foods and ready meals for Indian citizens, a recent study showed that excess eating of whole-grain bread is related to lower levels of Alanine transaminase, Gamma-glutamyltransferase and C-reactive protein (hs), whereas high consumption of red meat is linked with higher circulating levels of GGT and hs-CRP. So the vegan diet is useful for gastrointestinal health, lowering unwanted calories, simple sugar level mostly among the women[18]. Child-bearing age, as well as postmenopausal women, are mostly affected in India in spite of goods diet recommended by the dietitians or doctors. In general, apart from obesity, hypothyroidism is also strongly related to diabetes because both are endocrine disorders having high affinity[19-22]. In the human nutrition filed, all diet types somehow created by the experts/foods scientists or nutritionists as per the respective health issues but all are having pros and cons that means more or less useful. The most concerned and effective diet type to implement for hypothyroidism subjects or obese patients suffering from hypothyroidism should be vegan all across the world as per reviews due to enough green vegetables or other colorful vegetables, fruits available in the country like India[23].

Few studies showed that HT is positively correlated with sedentary lifestyles mostly among housewives living in metro cities. Obesity is the major comorbidity for this population[24-25]. In this review study, the most important concern is endocrine disruptors available everywhere mainly in the foods, environment. The pesticides, herbicides, plastics and other chemicals which are massively used in agriculture as well as industry. As per chemicals analysis, some flame retardants which are Tetrabromobisphenol A (TBBPA) and Polybrominated diphenyl ethers (PBDE) can be treated as the high level of endocrine disruptors that may influence thyroid

hormones balance in a human body. These chemicals mostly affect fish, dairy foods, eggs and meat which further affect our endocrine system. Dioxin is often found in meat, a by-product of combustion also as a potent ED. Triclosan is another EDC more or less available or added in processed foods. Endocrine disruptors or thyroid disruptors practically bind with antimicrobial products like milk packets or other dairy foods packets. Chemicals that are in general used for preservation at cold storages may also be dangerous for our various lifestyle disorders including gastrointestinal disorders[26,27]. Hence, there is a requirement of proper, safe, low-cost diet plan and undoubtedly, the vegan diet is the best choice. The vegan diet is full of vegetables, fruits, cereals, pulses, legumes but no animal foods. So the balance of protein and its excretory products like urea, uric acid, and creatinine is remained maintained and not excess in daily meals[27].

As per studies, vegetables, fruits and other vegan foods are free or low in quantity from the risks of endocrine disruptors, so vegan diet most effective and helpful for hypothyroidism patients. Housewives who are obese or prone to endocrine disorders must restrict or have low consumption of these foods usually rich in EDCs which are having a chance to be present in the vegan diet alsobut expected to be less than non-veg diet[27]. In my study, I have discussed that lack of Iodine in our daily meals is one of the main reasons for hypothyroidism although India is under transition from Iodine insufficiency to sufficiency even in non-coastal areas due to iodized salt[28]. The study tried to focus that iodine is no longer the main reason but endocrine disruptors are the main factors to affect TSH and T4 level; as a consequence hypothyroidism often observed in obese women.

Conclusion

Housewives (post-marriage life) who follow the vegan diet i.e. does not consume animal foods, are less affected by endocrine disruptors in the city life that means very less chance of hypothyroidism as well as other endocrine diseases. Urban areas based women who are obese or prone to endocrine disorders must restrict or should have low consumption of some foods containing EDCs even present in a vegan diet like cruciferous vegetables and soya products. Practically, vegan people are to some extent free from EDCs which are coming from animal foods. In conclusion, the implementation of a vegan diet might be better and safer to obese housewives suffering from hypothyroidism at subclinical to moderate level.

References

1. Bagcchi S. (2014). Hypothyroidism in India: More to be done. *The Lancet Diabetes and Endocrinology*, 2(10), 778. https://doi.org/10.1016/S2213-8587(14)70208-6.

2. Banerjee S. (2018). A Study on Relationship between Hypothyroidism and Non-Alcoholic Fatty Liver Disease among Obese Women in Kolkata Intervening with Diet. *International Journal of Research and Development*, 3(10), 43-45.

3. Biondi B. (2010). Thyroid and obesity: An intriguing relationship. *Journal of Clinical Endocrinology and Metabolism*, 95(8), 3614-3617. https://doi.org/10.1210/jc.2010-1245

4. Unnikrishnan A.G., Kalra S., Sahay R.K., Bantwal G., John M. and Tewari N. (2013). Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. *Indian J Endocrinol Metab*., 17(4), 647-652.

5. Menon U.V., Sundaram K.R., Unnikrishnan A.G., Jayakumar R.V., Nair V. and Kumar H. (2009). High Prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. *J Indian Med Assoc*., 107, 72-77.

6. Kokkoris P. and Pi-Sunyer F.X. (2003). Obesity and endocrine disease. *Endocrinol Metab Clin North Am,* 32(42), 895-914.

7. Aoki Y., Belin R.M., Clickner R., Jeffries R., Phillips L. and Mahaffey K.R. (2007). Serum TSH and total T4 in the United States population and their association with participant characteristics: National Health and Nutrition Examination Survey (NHANES 1999-2002). *Thyroid,* 17, 1211-1223.

8. Douglas C.C., Lawrence J.C., Bush N.C., Oster R.A., Gower B.A. and Darnell B.E. (2007). Ability of the Harris-Benedict formula to predict energy requirements differs with weight history and ethnicity. *Nutrition Research*, 27(4), 194-199.

9. Massart F., Ferrara P. and Saggese G. (2012). Environmental Thyroid Disruptors and Human Endocrine Health. *A New Look at Hypothyroidism*, 3(5), 772-1572.

10. Usha V.M., Sundaram K.R., Unnikrishnan A.G., Jayakumar R.V., Nair V. and Kumar H. (2009). High prevalence of undetected thyroid disorders in an iodine sufficient adult south Indian population. *Journal of the Indian Medical Association*, 107(2), 72-77.

11. Sharma R., Bharti S. and Kumar K.H. (2014). Diet and thyroid - myths and facts. *J Med NutrNutraceut,* 3(2), 60-75.

12. Tonstad S., Nathan E., Oda K. and Fraser G. (2013). Vegan diets and hypothyroidism. *Nutrients*, 5(11), 4642-4652.

13. Report (2012). Let them eat air. The Guardian. 28 September 1999. Retrieved 10 March 2012.

14. Hunter, Fiona (April 2011). Vegetarian and vegan diets. BBC Health. Retrieved 12 March 2012.

15. Craig W.J. and Mangels A.R. (2009). Position of the American dietetic association: vegetarian diets. *J. Am. Diet. Assoc*., 109, 1266-1282. DOI: 10.1016/j.jada.2009.05.027.

16. Krajcovicova-Kudlackova M., Buckova K., Klimes I. and Sebokova E. (2003). Iodine deficiency in vegetarians and vegans. *Ann. Nutr. Metab*., 47, 183-185.

17. Leung A.M., LaMar A., He X., Braverman L.E. and Pearce E.N. (2011). Iodine status and thyroid function of Boston-area vegetarians and vegans. *J. Clin. Endocrinol. Metab*., 96(8), E1303–E1307.

18. Montonen J., Boeing H., Fritsche A., Schleicher E., Joost H.G., Schulze M.B., Steffen A. and Pischon T. (2013). Consumption of red meat and whole-grain bread in relation to biomarkers of obesity, inflammation, glucose metabolism and oxidative stress. *Eur. J. Nutr*., 52, 337-345. DOI: 10.1007/s00394-012-0340-6.

19. Unnikrishnan A.G. and Menon U.V. (2011). Thyroid disorders in India: An epidemiological perspective. *Indian Journal of Endocrinology and Metabolism*, 15(Suppl2), S78–S81.

20. Reinehr T. (2011). Obesity and thyroid function. *Mol Cell Endocrinol*, 316, 165-171.

21. Sanyal D. and Raychaudhuri M. (2016). Hypothyroidism and obesity: An intriguing link. *Indian journal of endocrinology and metabolism*, 20(4), 554.

22. Hoermann R., Midgley J.E.M., Larisch R. and Dietrich J.W. (2013). Recent Advances in Thyroid Hormone Regulation: Toward a New Paradigm for Optimal Diagnosis and Treatment. *Frontiers in Endocrinology*, 8, 364.

23. Anandhasayanam A., Arivudainambi T., Kannan S. and Udaya Chander J.S.J. (2016). Prevalence of Hypothyroidism and Its Co-Morbidities In Relation To the Causes and Risk Factors in Patients Undergoing Levothyroxine Therapy. *Int J Pharm Sci Res*, 7(3), 1251-1257.

24. Buckley C.D. (2006). Fibroblasts and tissue remodeling (2007): Defining a role for fibroblasts in the persistence of chronic inflammation. *Presented at Society for Endocrinology BES, Birmingham*, UK. Endocrine Abstracts 13. S9.

25. Verma A., Jayaraman M., Kumar H.K. and Modi K.D. (2008). Hypothyroidism and obesity. *Cause or effect,' Saudi Med J*., 29, 1135-1138.

26. Murthy M.B. and Murthy B.K. (2012). Thyroid disruptors and their possible clinical implications. *Indian journal of pharmacology*, 44(4), 542-543.

27. Studies R.A. (2012). Endocrine Disrupting Chemicals in Food. 48.

28. Banerjee S. (2019). Study on Yoga Intervention along with Diet on Hypothyroidism Associated with Obesity among Sedentary Working Women in West Bengal. *International Journal of Yoga and Allied Sciences*, 8(1), 1-10.