



ISSN: 2230-9926

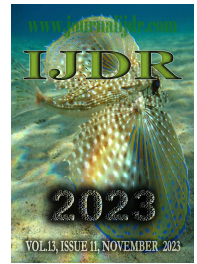
Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 13, Issue, 11, pp. 64152-64156, November, 2023

<https://doi.org/10.37118/ijdr.27402.11.2023>



RESEARCH ARTICLE

OPEN ACCESS

DEPRESSION AND ANXIETY DISORDERS IN THYROID PATIENTS

Guniseti Tejaswini, Muta Apoorva, Thokala Manisha, Namilikonda Rachana, Ravi Chander Thatipelli and Tejaswi Chillara*

Department of Pharmacy Practice, Vaagdevi Pharmacy College, Bollikunta, Warangal, Telangana

ARTICLE INFO

Article History:

Received 8th August, 2023
Received in revised form
13th September, 2023
Accepted 26th October, 2023
Published online 27th November, 2023

Key Words:

Thyroid, Anxiety, Depression, Hamilton scale.

*Corresponding author: Tejaswi Chillara

ABSTRACT

This study was done to assess medication adherence, awareness in thyroid patients and to evaluate the depression and anxiety in thyroid patients using depression and anxiety scales. A randomised observational study was conducted, in the primary health care centres and through direct visits to homes in Hanamkonda for a period of 6 months. In the overall study we collected 406 thyroid patients' data in this 305 were hypothyroidism and 101 were hyperthyroidism. The total data was analysed using the scoring system to find out the ranges. From our study we concluded that thyroid conditions would affect the mental health condition of the person.

Copyright©2023, Guniseti Tejaswini et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Guniseti Tejaswini, Muta Apoorva, Thokala Manisha, Namilikonda Rachana, Ravi Chander Thatipelli and Tejaswi Chillara. 2023. "Depression and anxiety disorders in thyroid patients". *International Journal of Development Research*, 13, (11), 64152-64156.

INTRODUCTION

The thyroid is a butterfly-shaped gland, is situated immediately below the larynx. It produces hormones that regulate the body's energy consumption. These hormones have an impact on every organ in our body and regulates a number of the most vital processes.

Secretion: Thyroid hormone synthesis and release are stimulated by thyroid-stimulating hormone (TSH) from the anterior pituitary and thyrotropin-releasing hormone (TRH) from the hypothalamus [12].

Functions: Increase baseline metabolic rate, promote protein synthesis, improve excretion of cholesterol, hasten the growth of the body, and promote nervous system development.

Synthesis: Thyroid follicular cells actively move iodide ions (I⁻) from the circulation into the cytosol. Thyroglobulin (TGB), a large glycoprotein made by the follicular cells involving in capturing (I⁻). TGB will undergo iodization I⁻ → I₂. Mono-iodotyrosine (T1) is produced when one iodine atom is bounded, and diiodotyrosine is formed when two ionizations occur (T2). Either one T1 and one T2 molecule or two T2 molecules combine to generate T4. TGB is broken down by digestive enzymes in the lysosomes, which release molecules of T3 and T4. T3 and T4 diffuse through the plasma membrane into interstitial fluid and subsequently into the circulation.

Although T4 is often secreted in greater amounts than T3, T3 has a far higher potency. Additionally, the majority of the T4 that enters a body cell is converted to T3 by removing one iodine.

Types of thyroid disorder: Hypothyroidism, Hyperthyroidism.

Hypothyroidism: Insufficient thyroxine (T4) production or secretion by the thyroid gland results in hypothyroidism.

Hyperthyroidism: increased thyroid hormone synthesis, excessive release of thyroid hormones, an abnormal concentration of thyroid hormones in the tissues, known as hyperthyroidism [8].

Thyroid hormone metabolism in the brain: Thyroid function issues can have a major impact on mental status, including emotion and cognition. Both too much and too enough thyroid hormones can lead to mood disorders, including depression, which is typically curable with effective thyroid medication.

Psychiatric manifestations of thyroid disorders: The neuropsychiatric symptoms of primary thyroid diseases, such as hypothyroidism and hyperthyroidism, can range from mild anxiety and depression to overt psychosis [12].

Need for the study: The study is to assess mental illness, knowledge, and dietary changes in hypothyroidism and hyperthyroidism patients and to educate the patients regarding thyroid problems, their complications, and the advantage of medication adherence.

Aim of Study: To determine Depression and Anxiety disorders in thyroid patients.

Objectives of Study

- To assess the anxiety and depression in Hypothyroidism and Hyperthyroidism patients.
- To assess medication adherence.
- To assess the awareness of thyroid in patients.

METHODOLOGY

Materials and Methods: It is a randomised observational study designed to evaluate the depression and anxiety in thyroid patients. The study was conducted in primary health care centres and through direct visits to homes in Hanamkonda, Warangal, Telangana, India. This study was conducted over a period of 6 months on 406 subjects of which 305 were diagnosed with Hypothyroidism and 101 patients were diagnosed with Hyperthyroidism. Subject selection of both hypothyroidism and hyperthyroidism of age group between 20-75 years were included. Subjects with other comorbidity conditions, pregnant women and children below 15yrs were excluded. Data was collected from the data collection form And through questioning scales – Hamilton Depression Scale – 17 Items, with a maximum score of 52. 0-7 – normal, 8-16 – mild, 17-23 – moderate, >24 – severe. Hamilton Anxiety Scale – 14 Items. Each of the 14 subjects, grade each one on a scale of zero to four. Zero indicates no problem, and four indicates a severe problem. Below 14 – normal, 14-17 – mild, 18-24 – moderate, 25-30 – severe. and the data was analyzed using Microsoft excel.

RESULTS

Distribution of Thyroid Patients

Distribution of thyroid patients	Hypothyroidism	Hyperthyroidism
No. of patients	305	101

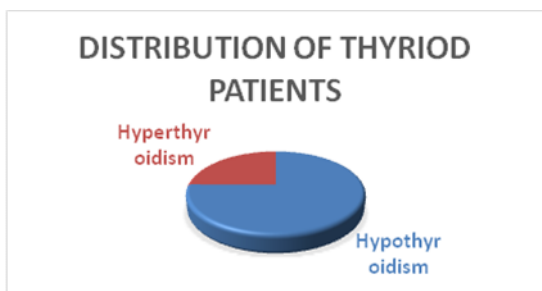


Fig. 1. Distribution of thyroid patients

Among the total 406 sample size, HYPOTHYROIDISM and HYPERTHYROIDISM patients were found to be 305(75%) & 101(25%), respectively.

Gender wise distribution of thyroid disorder patients

Gender	Female	Male
No. of patients	282	124

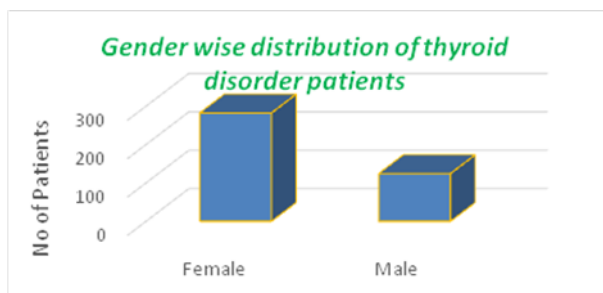


Fig. 2. Gender wise distribution of thyroid disorder patients

Among the total 406 sample sizes, Female and Male patients were found to be 282(69%) & 124(31%), respectively.

Age wise distribution of thyroid patients

Age Group (in years)	20 –40	40 –60	60 –75
No. Of Patients	84	183	139

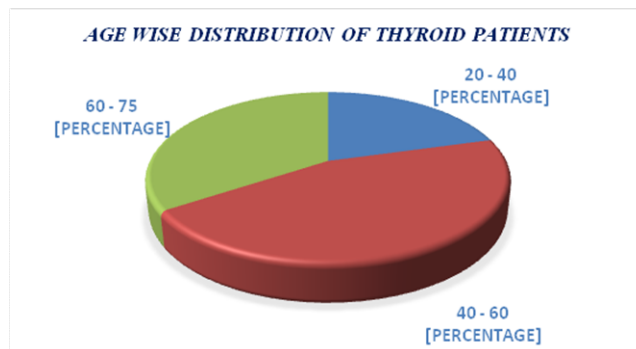


Fig. 3. Age wise distribution of thyroid patients

Among 406 population, subjects with thyroid problems with age group of 20-30 yrs, 30-40 yrs, and 50-75 yrs were found to be 84, 183 and 139 respectively.

Drug usage distribution in thyroid patients

Drug usage	With medication	Without medication
No of patients	349	57

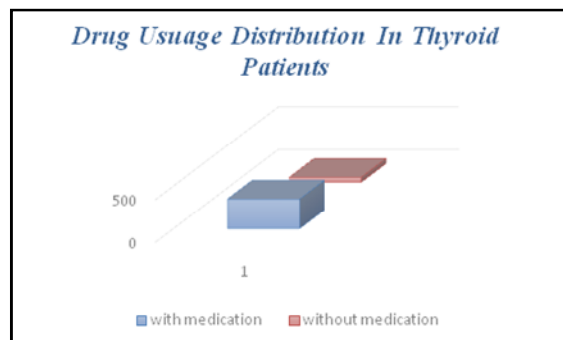


Fig. 4. Drug usage distribution in thyroid patients

Among the total, 406 sample sizes, With medication, and Without medication patients were found to be 349(86%) & 57(14%), respectively.

Knowledge on Thyroid problems

Knowledge on thyroid problems	Awareness on Thyroid problems	Unawareness on Thyroid problems
No. of patients	94	314

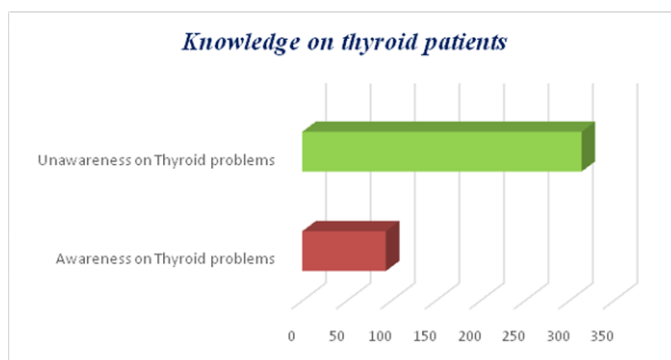


Fig. 5. Knowledge of Thyroid Problems

Among the total 406 sample size, Awareness and Unawareness of thyroid problems in patients were found to be 312(77%) & 94(23%), respectively.

Economical status of thyroid patients

Economic Status	Low	High
No. Of Patients	240	166

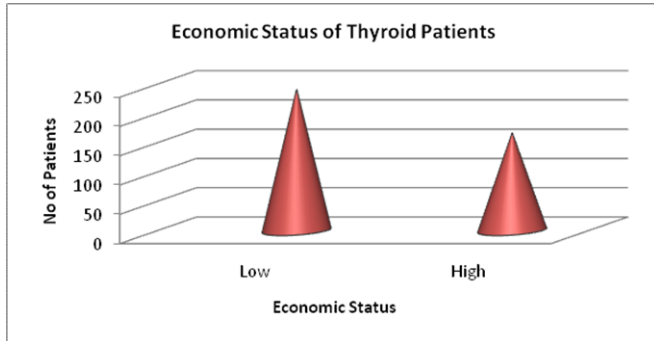


Fig. 6. Economical Status of thyroid patients

Among the total 406 sample size, Low Economical Status and High Economic Status in thyroid patients were found to be 240(59%) & 166(41%), respectively.

Medication adherence in thyroid patients

	Medication adherence	Medication non adherence
No of patients	232	117
% Of adherence	57.14285714	28.81773

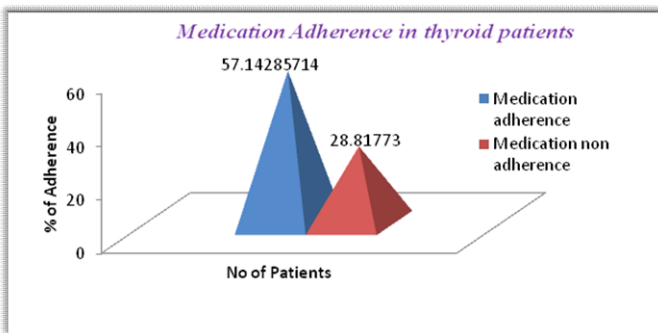


Fig. 7. Medication Adherence in Thyroid Patients

Among the total 406 sample sizes, Medication Adherence and Medication Non-Adherence in thyroid patients were found to be 232(66%) & 117(34%), respectively.

Depression scale on thyroid patients (ham-d scale)

Grade	Mild	Moderate	Severe	Very Severe
No. Of Patients	239	72	31	8

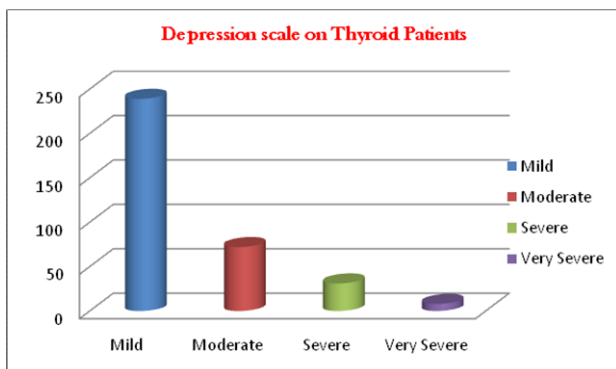


Fig. 8. Depression Scale on Thyroid Patients

According to the Depression Scale thyroid patients were classified into Mild, Moderate, Severe, and Very Severe and were found to be 239, 72, 31 & 8 respectively.

Anxiety scale on thyroid patients (ham-a scale)

Grade	Mild	Moderate	Severe
No. Of patients	89	38	06

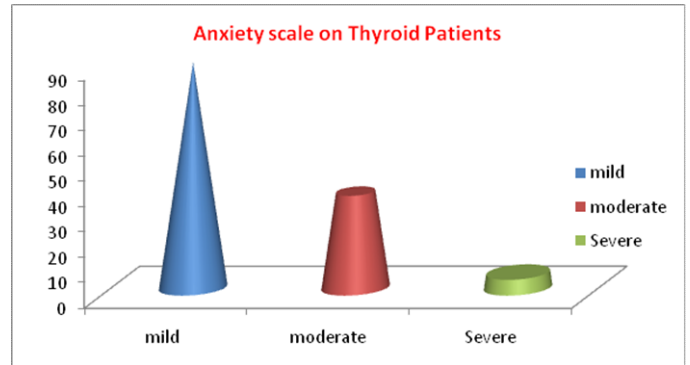


Fig. 9. Anxiety with respect to Grades

According to the Anxiety Scale thyroid patients were classified into Mild, Moderate, Severe were found to be 89, 38 & 6 respectively.

Anxiety and depression ratio on thyroid patients

Anxiety and Depression	Both	Normal
No. Of the patients	67	56

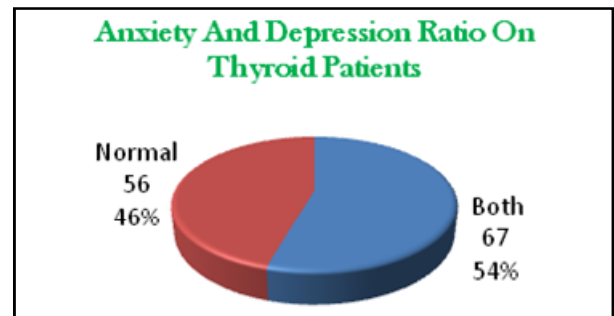


Fig. 10. Anxiety and Depression ratio in thyroid patients

Among the total 406 sample size, Patients with both Anxiety and Depression and Patients with no Anxiety and Depression symptoms were found to be 67(54%) & 56 (46%), respectively.

Lifestyle Distribution

Life Style	Sedentary	Non-Sedentary
No. Of Patients	302	104

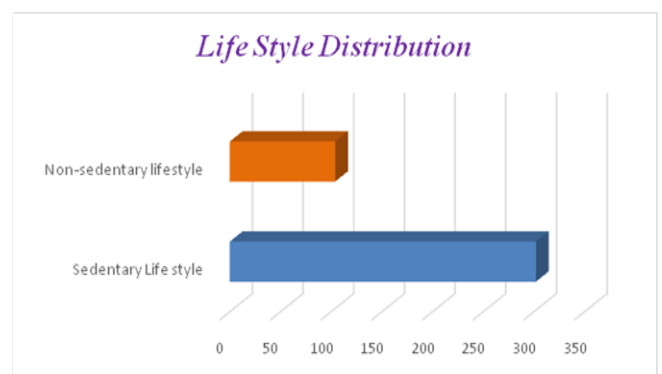


Fig. 11. Lifestyle Distribution

Among the total 406 sample size, thyroid patients with Sedentary Lifestyle and Non-Sedentary Lifestyle were found to be 302 (74%) & 104 (26%), respectively.

Social Habits

Social Habits	Smoking	Alcohol	Both	Stress	Other Factors
No. Of Patients	102	184	98	94	35



Fig. 12. Social Habits

Among the total 406 sample size, the thyroid patients with Social habits such as Smoking, Alcohol & both habits, stress, and other factors were found to be 102(27%),184 (48%) & 98(25%), 94(18%), 35(7%) respectively.

Dietary Habits

Dietary Habits	Proper diet	Improper diet
No. of patients	144	262

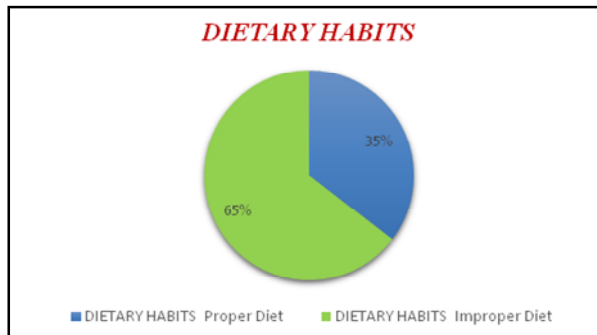


Fig. 13. Dietary Habits

Among the total 406 population, the thyroid patients with Proper diet and Improper diet were found to be 144(35%) & 262(65%), respectively.

Sleep Cycle

Sleep Cycle	Normal sleep	Abnormal sleep
No. Of Patients	187	219

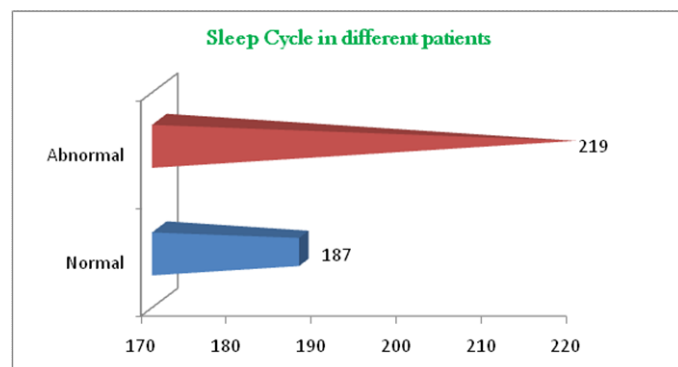


Fig. 14. Sleep Cycle

Among the total 406 population, the thyroid patients with Normal sleep and Abnormal sleep were found to be 187(46%) & 219 (54%), respectively.

DISCUSSION

- In our study, we recruited a total of 406 subjects with Hypothyroidism and Hyperthyroidism and we found that among 406 subjects, 305 (75%) and 101 (25%) were diagnosed with Hypothyroidism and Hyperthyroidism, respectively, in which females are 282 (69%) and males are 124 (31%) based on these results females are more prone for thyroid problems when compared to males. And subjects of age group 30-50years are more prone to thyroid problems with anxiety and depression.
- We collected medication data using the medication history interview based on that, patients with medication are 9 (86%) and patients without medication are about 57 (14%). Based on this data, 349 patients are on regular medication and proper diet whereas, 57 patients who are previously diagnosed with hypothyroidism and hyperthyroidism are not taking medications regularly because of their negligence, due to lack of knowledge, and due to lack of awareness of thyroid problems and their complications.
- Economical status will affect medication adherence and non-adherence in the population. In our study, poor economical status was 240 (59%) and high economical status was 166 (41%). Based on these results patients with poor economical status were unable to purchase medications and unable to visit for regular check-ups.
- Based on the Hamilton depression scale, 111 patients are diagnosed with depression in that 72 (65%) members were in moderate disease condition, 31 (28%) members were in severe disease condition and 8 (7%) members were in a very severe disease condition. Of moderate and severe patients about 35 and 8 members are taking antidepressant medications, and cognitive and behavioral therapy, and out of 8 members about 3 members are taking anti-depressant medication, behavioral therapy, and electroconvulsive therapy.
- Based on the Hamilton Anxiety scale, 44 patients are diagnosed with anxiety in that 38(86%) members were in moderate disease condition, and 6 (14%) members were in a severe disease condition. Out of 38 members, about 21 members are on medication
- Some people are also experiencing both depression and anxiety about 67 (54%) members are taking both antidepressant medications and anxiolytics respectively.
- Compared to Non- Sedentary people, Sedentary people are more prone to thyroid problems due to lack of physical activity which affects hormonal imbalance. In our study, among 406 subjects, 302(74%) are sedentary people and 104(26%) are non-sedentary people.
- Medication adherence was affected by the patient’s social habits, stress, and other factors (such as family loss, and job loss) including alcohol, smoking, and both. But in our study, patients who are having social habits were showing non-medication adherence. Out of 406 subjects, 1184 (48%) are alcoholics, 102 (27%) are smokers and 98 (25%) are both alcoholics and smokers, 94(18%) people were experiencing stress and 35(7%) people are experiencing other factors respectively.
- People with proper dietary habits maintain thyroid hormone levels in the normal range whereas improper diet affects the body’s functions and may lead to dysfunction. In our study among 406 subjects, 144(35%) members are taking proper diet and about 262 (65%) members are taking improper diet.
- According to some of the studies, sleep is a major factor for the regulation and release of thyroid hormones where sleep deviation alters the functions of the hypothalamic-pituitary-thyroid axis and is associated with altered levels of TSH, T4, and T3 thus sleep for a minimum of 6-8hrs is necessary. Based on our study, about 187 (46%) population are having normal sleep, whereas 219 (54%) population is having improper sleep. Improper sleep cycle people have abnormal thyroid level.

CONCLUSION

- According to our study, we concluded that thyroid problems will affect the mental health condition of the person. Hypothyroidism patients are suffering from depression and hyperthyroidism patients are suffering from anxiety, some people are experiencing both depression and anxiety. The underline causes of mental health problems were non-medication adherence, lack of regular visits, and lack of regular monitoring of thyroid levels.
- Some Persons who are diagnosed with depression and anxiety are not taking any medication due to a lack of awareness of thyroid problems and their complications.

Acknowledgement: The author conveys my sincere regards and deep sense of gratitude to my respect guide for inspiring guidance, valuable suggestions. Words are not sufficient to express my deepest love and appreciation to my parents and my beloved friends.

Conflict of interest: The author declares no conflict of interest.

REFERENCES

1. Anne Engum, Trine Bjøro, Arnstein Mykletun, and Alv A. Dahl. Association between depression, anxiety, and thyroid function from 1995 - 1997. Department of Psychiatry, Innherred Hospital, N-7600 Levanger, Norway publication 05 July 2002.
2. Till Ittermann, Henry Völzke, Sebastian E. Baumeister, Katja Appel & Hans J. Grabe. Diagnosed thyroid disorders are associated with depression and anxiety. *Social Psychiatry and Psychiatric Epidemiology* volume 50, pages 1417–1425 (2015) publication 2015.
3. L.H. Duntans and A. Maillis. Hypothyroidism and depression – salient aspects of pathogenesis and management, Endocrine Unit, Evgenidion Hospital, University of Athens publication 2013.
4. Thomas W. Heinrich, M.D., and Garth Graham, M.D. hypothyroidism presenting as psychosis: myxedema madness, *journal of clinical psychiatry* publication 2003.
5. Roczniki Akademia Medycznej w Białymstoku. Quality of life, depressive symptoms, and anxiety in hyperthyroid patients Department of Adult Psychiatry, Poznań University of Medical Sciences, Poznań, Poland publication 1 jan 2005.
6. Bunevičius, Robertas^a; Prange, Arthur J Jr. Thyroid disease and mental disorders: cause and effect, current opinion in psychiatry publication July 2010.
7. Mehmet Murat Demet a, Bilgin Özmen b, Artuner Deveci a, Sibel Boyvada b, Hakan Adıgüzel a, Ömer Aydemir. Depression and Anxiety in Hyperthyroidism, Volume 33, Issue 6, November–December 2002.
8. IGOR KRAVETS, hyperthyroidism : diagnosis and treatment ,american academy of family physicians , page no.363-370, publication 2016
9. Susanne Fischer PhD, Ulrike Ehlert PhD. Hypothalamic–pituitary–thyroid (HPT) axis functioning in anxiety disorders. A Systematic Review, volume 35 publication 24 october 2017.
10. M Simon, Deborah Blacker, Nicole B Korbly, Saumya G Sharma, John J Worthington, Michael W Otto, Mark H Pollack. Hypothyroidism and hyperthyroidism in anxiety disorders revisited: new data and literature review, *Journal of Affective Disorders* Publication 2002.
11. Rousset B, Dupuy C, Miot F, et al. Thyroid Hormone Synthesis and Secretion, publication 2015.
12. Mirella P. Hage and Sami T. Azar. The Link between Thyroid Function and Depression, *Journal of Thyroid Research* Publication 2012.
13. Isabela M Bensenor, Rodrigo D Olmos & Paulo A Lotufo. Hypothyroidism in the elderly: diagnosis and management, publication 20 oct 2022.
14. Naomi M Simon, Deborah Blacker, Nicole B Korbly, Saumya G Sharma, John J Worthington, Michael W Otto, Mark H Pollack. Hypothyroidism and hyperthyroidism in anxiety disorders revisited: new data and literature review, *Journal of Affective disorders* 69(1-3) 2002.
15. Susanne Fischer, Ulrike Ehlert. Hypothalamic–pituitary–thyroid (HPT) axis functioning in anxiety disorders. A systematic review, *Journal of Psychosomatic research* volume 59, issue 5, publication November 2005
