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RESEARCH ARTICLE

RELATIONSHIP BETWEEN THYROID DISEASE AND MOST COMMON PSYCHOLOGICAL PROBLEMS IN KSA: A SURVEY STUDY

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Abstract

Background: Mental disorders are known to merge with thyroid disease and some literature related some psychological changes to thyroid disease such as depression and anxiety. The current research aimed to determine the relationship between thyroid disease and most common psychological disorders in KSA.

Methods: The current study aims to determine the relationship between thyroid disease and the most common psychological problems among population in KSA. The most suitable design is cross-sectional survey study. It was descriptive and correlational study. This enables the researcher to measure the effect and the outcome at a single point of time. This study design gives reliable results with short time and less effort. The study was conducted at (place). The participants were selected during October 2022. This study included adults aged 19 years or more via non-probability convenient sampling technique at a confidence level of 95% using Epi Info software equation.

Results: Of 1038 participants included in the study, there were 180 participants only who suffered from thyroid disease. This gives a prevalence of (17.3%) thyroid disease among study participants. Thyroid disease was more prevalent among female participants (P<0.0001) and among more than 40 years age group (P<0.0001). Table 1 shows the distribution of thyroid disease according to gender and age groups. The duration since diagnosis was since more than 5 years (n= 78, 43.3%). The diagnosis was hypothyroidism among most of patients (n= 154, 85.6%). The vast majority of study participants of thyroid disease reported having personality changes after the diagnosis (n= 140, 77.8%). The most frequent change was disorder in weight in terms of increase and decrease (n= 69, 38.3%). And this was more prevalent among females (P= 0.035).

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Conclusion: Study showed that quarter of participants suffered from thyroid disease, mainly hypothyroidism. The most frequent personality change was weight disturbances and was more common among female participants. Other reported psychological changes were depression, anxiety and personality changes. Participants was told that these symptoms are related to their thyroid condition.

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Introduction:-

Thyroid hormone has a significant positive effect on the adult brain (TH). Patients with hypo- or hyperthyroidism typically encounter a broad variety of mental health issues. Thyroid issues have been connected to both mood and cognitive difficulties. Extreme or insufficient thyroid function may have psychological consequences. If a patient's doctor has diagnosed him/her with an overactive thyroid, that disease might be a contributing factor in anxiety. One of the negative side effects of hyperthyroidism is anxiety [1].

Thyroid hormone is a natural energy booster for the whole body. The stimulation of the sympathetic nervous system causes the metabolism to speed up. Consequently, patient is not just worried, but thyroid hormone has an important role in the synthesis and regulation of serotonin and other neurotransmitters. Low serotonin levels are characterized by feelings of depression, anxiety, and a general malaise. When the thyroid isn't functioning properly, these neurotransmitters may become imbalanced, which may lead to anxiety and panic attacks. If anyone has just been diagnosed with thyroid illness, patient may be experiencing increased worry due to legitimate health concerns [2-3].

The prevalence of anxiety disorders in those with acute hypothyroidism is estimated to be between 30 and 40 percent. Subclinical hypothyroidism (SCH) is characterized by a range of symptoms, including anxiety, irritability, poor focus, delayed information processing, and impaired learning, as compared to healthy controls. The thyroid, shaped like a butterfly, is a gland located in the neck in front of the windpipe (trachea). From controlling heart rhythm to maintaining internal temperature, the hormones it secretes have a broad variety of impacts [4].

Mental health difficulties are linked to thyroid abnormalities. High rates of depression and anxiety are also more common in those with thyroid dysfunction, and research has shown that thyroid hormone receptors are linked to limbic areas involved in mood regulation. Treatment response in major depression and bipolar illness may be predicted by thyroid state, and augmentation of thyroid hormone shows therapeutic effectiveness in treatment-resistant depression. Thyroid deficiencies have been linked to schizophrenia-spectrum disorders, although the mechanism of this association is poorly understood. Multiple studies have shown an increased risk of thyroid issues in those with schizophrenia. Psychosis devoid of affective symptoms has been linked to autoimmune thyroid illness [1]. This study fills a gap in the literature by investigating the link between thyroid illness and mental health issues in the KSA population.

Many unpleasant and potentially deadly health problems have been related to an overabundance of these hormones. Overactive thyroid may affect everyone, but between the ages of 20 and 40, it strikes women around 10 times more commonly than men. The present research set out to establish a connection between thyroid dysfunction and the most prevalent mental health issues experienced by the Saudi population.

Methods:-

Study design and setting

The current study aims to determine the relationship between thyroid disease and the most common psychological problems among population in KSA. The most suitable design is cross-sectional survey study. It was descriptive and correlational study. This enables the researcher to measure the effect and the outcome at a single point of time. This study design gives reliable results with short time and less effort. The study was conducted at (place). The participants were selected during October 2022.

Participants, sampling and sample

This study included adults aged 19 years or more via non-probability convenient sampling technique at a confidence level of 95% using Epi Info software equation.

Instruments and data collection
Data was collected using a questionnaire filled through a self-administered approach from participants or in an administered manner by the researcher.

Study instruments consists of the following domains:
1. Sociodemographic data
2. Identification of presence of thyroid problem
3. Assessment of psychological status

Data Analysis
Data obtained from questionnaire were entered and analyzed using SPSS program version 23 computer software. Sociodemographic data are presented using descriptive statistics as means, median, percentages and standard deviation. Independent T test and one-way Anova are used to show statistical significance among participants characteristics. Chi square test is used to show relationship between categorical variables.

Ethical Consideration
An approved permissionwasgained from (institution)to collect quantitative data from study participants regarding thyroid and psychological conditions. After explanation of study objectives, participants were asked to volunteer to participate at our study. In addition, verbal informed consent was gained from participants before asking questions.

Results:-
The study included 1038participants. Among them, there were 601 females (57.9%). Figure 1 shows the gender distribution among study participants.

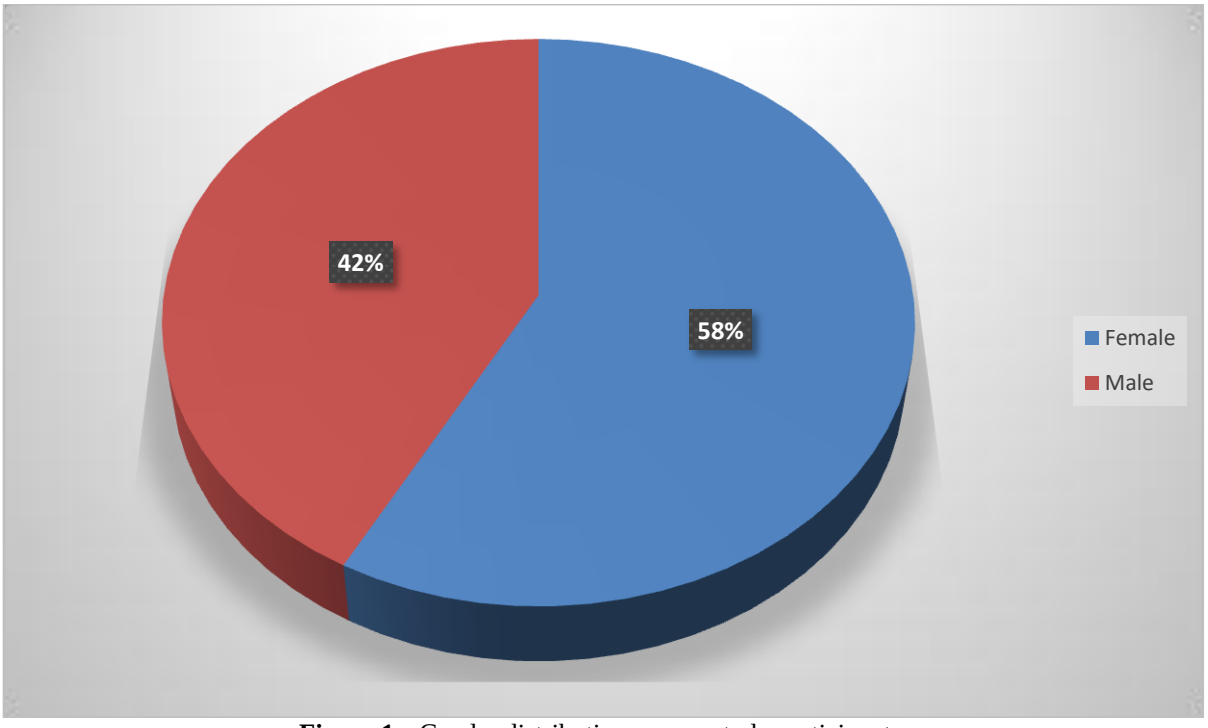

Figure 1:- Gender distribution among study participants.

The most frequent age group was 25-30 years (n= 269, 25.9%) while the least frequent age group was 36-40 years (n= 171, 16.5%). Figure 2 shows age groups distribution among study participants.

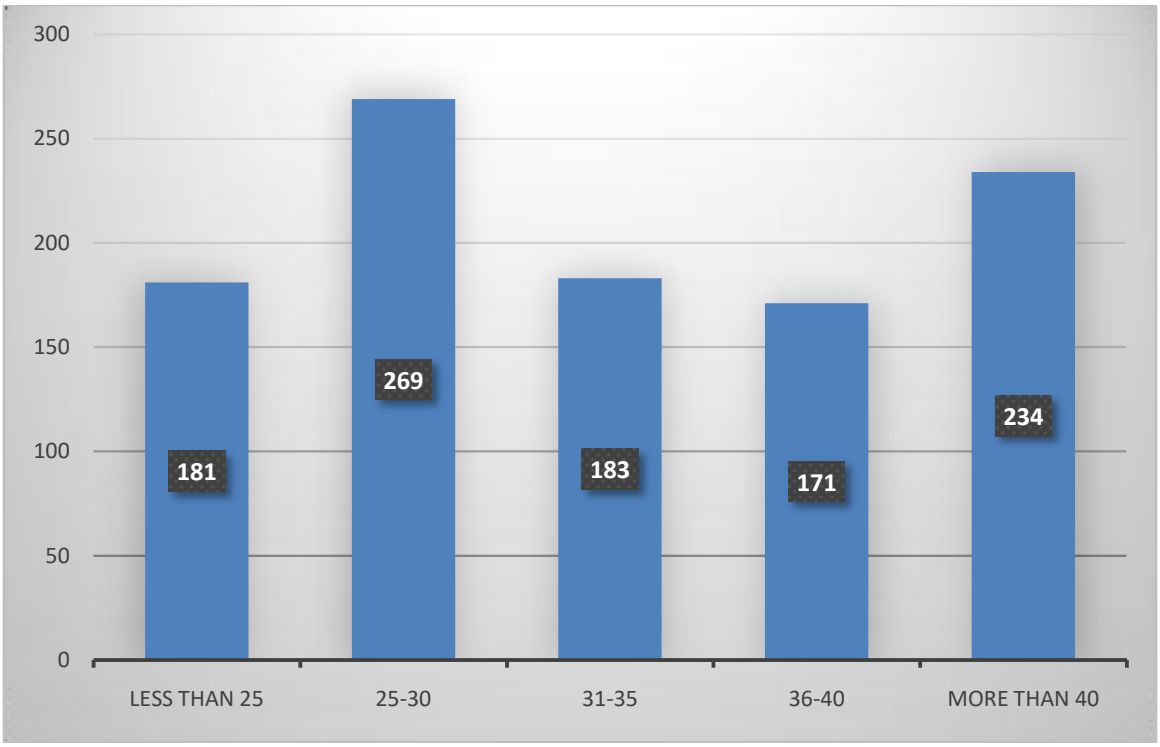

Figure 2:- Age groups distribution among study participants.

Vast majority of study participants were Saudi (n= 1019, 98.2%) while there were only 19 non-Saudi participants (1.8%). The educational level varied among study participants with more than half of them holding bachelor degree (n= 568, 54.7%). Figure 3 shows the distribution of educational level among study participants.

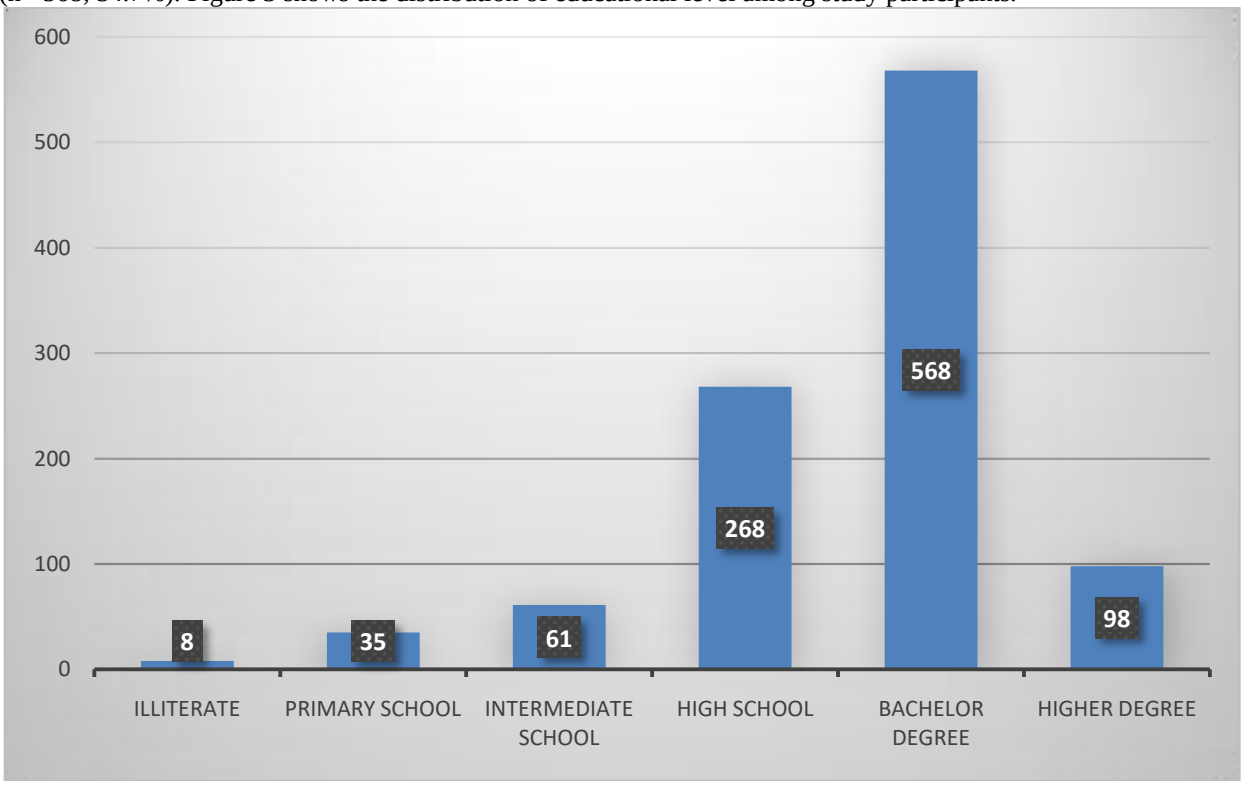

Figure 3:- Educational level distribution among study participants.

Among study participants, there were 180 participants only who suffered from thyroid disease. This gives a prevalence of (17.3%) thyroid disease among study participants. Thyroid disease was more prevalent among female participants (P<0.0001) and among more than 40 years age group (P<0.0001). Table 1 shows the distribution of thyroid disease according to gender and age groups.

Table 1:- Distribution of thyroid disease among study participants according to gender and age groups.

Variable		Frequency	P value
Gender	Male	34	<0.0001
	Female	146	
	Less than 25 years	14	<0.0001
	25-30 years	26	
	31-35 years	45	
	36-40 years	34	
	More than 40 years	61	

The duration since diagnosis varied among thyroid disease participants (n= 180). Most of them have been diagnosed since more than 5 years (n= 78, 43.3%). Figure 4 shows the duration of diagnosis among study participants.

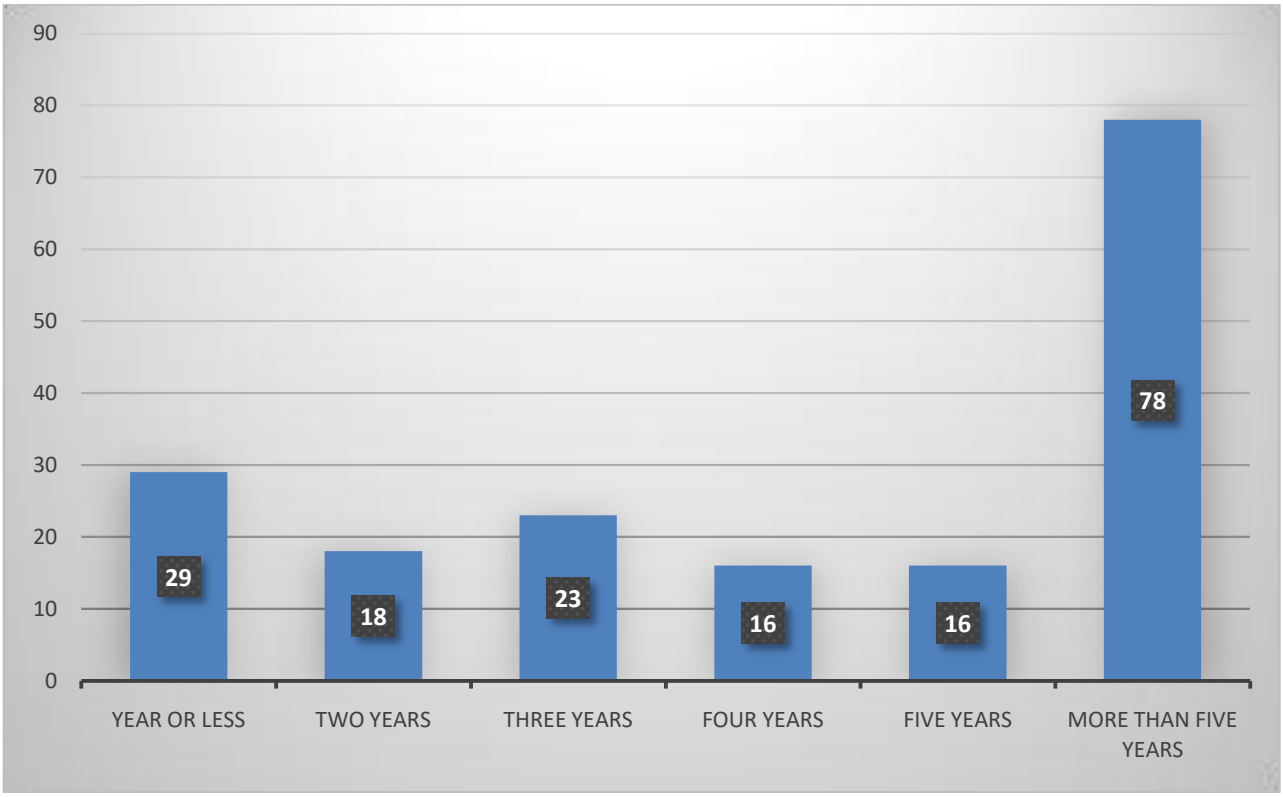

Figure 4:- Diagnosis duration distribution among study participants.

The diagnosis was hypothyroidism among most of patients (n= 154, 85.6%) and hyperthyroidism among 26 patients (Figure 5). There were 10 smokers among thyroid disease patients (10%) and 25 participants had type 2 diabetes mellitus (13.9%).

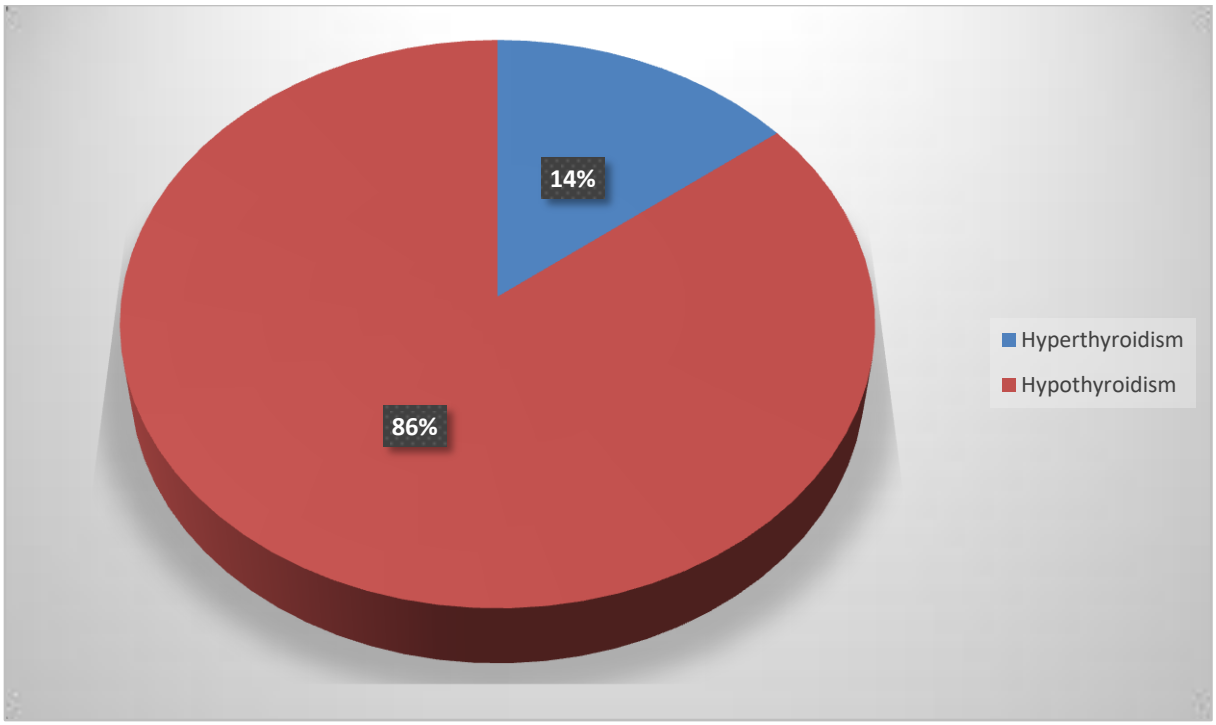

Figure 5:- Diagnosis distribution among study participants.

The vast majority of study participants of thyroid disease reported having personality changes after the diagnosis (n= 140, 77.8%). The most frequent change was disorder in weight in terms of increase and decrease (n= 69, 38.3%). And this was more prevalent among females (P= 0.035). Table 2 shows the most frequent personality changes among thyroid disease patients. Most of participants reported improvement of symptoms with medications (n= 122, 67.8%). Most of thyroid disease patients told their treating physician about the symptoms (n= 137, 76.1%). On the other hand, the treating physician responded that these symptoms are related to the thyroid disease (n= 123, 68.3%). Psychological symptoms were more prevalent among hypothyroidism patients (P<0.0001)

Table 2:- Psychological changes among thyroid disease patients (N= 180).

Personality changes	Frequency	Percent
Weight disturbances	69	38.3
Depression	43	23.8
Anxiety	31	17.2
Personality changes	17	9.4

Discussion:-

One of the most prevalent thyroid conditions is hyperthyroidism. However, meeting diagnostic criteria for mental problems in addition to hyperthyroidism is quite rare. Depression has been connected to thyroid issues. It's possible they'll upset your head and heart. Thyroid hormone may affect mood, and both too much and too little of it can be problematic. Conversely, mild thyroid dysfunctions could coexist with depression [4-6]. Hyperthyroidism symptoms are commonly misdiagnosed as signs of depression or other mental illnesses [7-10]. People with hyperthyroidism often exhibit autonomic indicators, such as tension and other symptoms that might be misinterpreted as evidence of mental disorder [11]. The health of the patient is at stake, therefore it's crucial to keep an eye out for these symptoms, acquire a diagnosis, and start treatment as soon as feasible.

Several mental illnesses have been linked to hyperthyroidism. With a patient diagnosed with exophthalmic goitre, Basedow recorded the first occurrence of manic psychosis more than 150 years ago [12]. Hyperthyroidism may cause a number of symptoms, however psychotic illnesses are very rare [13-14]. A growing number of individuals, however, are identifying themselves as suffering from both anxiety and depression [15-16]. In addition, persons with

hyperthyroidism seem to have an elevated risk of suicidality [15], underscoring the need of diagnosing mental health challenges and symptoms within this group.

Thirty to forty percent of those with acute hypothyroidism also suffer from anxiety [17-18]. Anxiety, impatience, slow processing of new information, and trouble learning are all symptoms of subclinical hypothyroidism (SCH) compared to those of healthy persons [19].

Mental health issues, such as hypothyroidism, may make it difficult to learn new things and do daily chores. This can manifest in a number of ways, including a sluggish processing speed, ineffective executive functions, and a lack of long-term memory. The inability to take pleasure in life is hampered by the symptoms of severe hypothyroidism, which might include dementia and depression. Neuropsychiatric problems have been observed to improve with treatment for overt hypothyroidism, SCH, and restoration to euthyroid levels; however, outcomes have been mixed [20]. Authors found that hyperthyroidism was associated with more severe anxiety and depression symptoms in women [21-22].

Conclusion:-

Study showed that quarter of participants suffered from thyroid disease, mainly hypothyroidism. The most frequent personality change was weight disturbances and was more common among female participants. Other reported psychological changes were depression, anxiety and personality changes. Participants was told that these symptoms are related to their thyroid condition.

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