A Prevalence of Thyroid Disorders at Al-Wahat Region of Libya During 2022

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Abstract
About 1272 cases of thyroid hormones were examined. The study was conducted during the year 2022 in the Al-Wahat region / Libya, it was found that 10.5% suffer from a disorder in their hormones, 40% of these cases suffer from a deficiency in their hormones, and 60% of them suffer from an excess. The number of women who suffer from a disorder in their hormones was 81%, while the number of men was 19%, 48% of women with high, and those with low was 33%. In addition, 13% of the males with high and those with low was 6%. It was found that the high and low % increase as the normal distribution from the age of 30 to 70 for all cases of thyroid gland disorder with a mean of 44 years and a standard deviation S = 17.5 for high values, and 18.9 for low values. The variation coefficient of 39.7 and 42.9, and the most common age was (The mode) for the high is 40 years and for the low is 30 years. In other words, the high is greater than the low for them, and the mean in both cases is the age of 40. The most common values for the high are at 42 in general, common age was (The mode) for the high is 40 years and for the low is 30 years. In other words, the high is greater than the low for them, and the mean in both cases is the age of 40. The most common values for the high are at 42 in general, common age was (The mode) for the high is 40 years and for the low is 30 years. In other words, the high is greater than the low for them, and the mean in both cases is the age of 40.

Keywords: thyroid hormones, hypothyroidism, thyroid activity, and Pearson correlation coefficient.

1. INTRODUCTION
The thyroid gland is an endocrine gland found in vertebrates. The thyroid gland secretes three hormones, which are thyroid hormones. Thyroid hormones affect the rate of metabolism and protein synthesis. They also affect growth and development in children. Calcitonin plays a role in the balance of calcium within the body.

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fatigue, and cognitive symptoms,[10] idiopathic pulmonary and hepatic fibrosis,[9] female sexual dysfunction,[10] schizophrenia,[11] and autoimmune diseases.[12] Furthermore, thyroid abnormalities increase the risk of compounded adverse outcomes for COVID-19 and affect the patient’s age. Having a thyroid disorder or hypothyroidism, but not hyperthyroidism, has a poor outcome for COVID-19.[13] Levothyroxine. Treatment for hypothyroidism may reduce the risk of breast cancer in women with hypothyroidism.[14] Maternal hypothyroidism when corrected before birth does not affect hearing in clinical infants.[15]

Hyperthyroidism is a common endocrine disorder in which the thyroid gland produces too many hormones, which speed up the metabolism. Antioxidant supplements can be used to improve thyroid function in hyperthyroid patients by increasing antioxidants and restoring the balance of antioxidants, oxidative stress,[16] and patients with asthma are more likely to develop hyperthyroidism.[17] Also, patients with atrial fibrillation associated with hyperthyroidism have a high risk of stroke, and systemic embolism such as non-thyroidal atrial fibrillation,[18] and treatment is associated with Radioactive iodine for hyperthyroidism increases the risk of death.[19] Pulmonary hypertension levels may be an independent risk factor for patients with hyperthyroidism.[20] Hyperthyroidism may lead to many health problems such as exacerbation, impotence in both sexes, [21,22] menstruation problems, [23] increased cardiac output, increased systolic blood pressure, increased levels of renin, angiotensin, and aldosterone,[24] and increases the risk of stroke. Alzheimer’s disease[25] as well as the risk of atrial fibrillation,[26] malignant tumors,[27,28] and increased risk of venous thromboembolism.[29]

In this study, standing on the prevalence of thyroid disease in Al-Wahat/ Libya and the extent of its impact on women, children and men, and which of them had the highest impact and at what age due to the distance of Al-Wahat/ Libya from the sea and the lack of fish and seafood intake in their food culture, which exposes them to iodine deficiency and perhaps a strike thyroid gland more than other areas.

2. MATERIALS AND METHODS

Al Wahat is located to the south of the city of Ajdabiya, about 250 km, and it consists of three main regions, which are Jalou, Awwila, and Ajkarah. These three main areas are under study. The study relied on official data from the laboratories located in the Al-Wahat region, and a comprehensive census of cases of hyperthyroidism and hypothyroidism in women and men. Moreover, frequency tables for age groups to determine which groups are more affected, and statistical analyses of the results, deduce what the research results indicate and make recommendations based on those results. Among these statistical indicators (SI) are the following:

Variation coefficient CV and we get from the relationship:

$$ CV = \frac{S}{X} \times 100 \hspace{1cm} (1) $$

Where S is the standard deviation, and we get from the relation:

$$ S = \sqrt{\frac{\sum (X - x)^2}{n - 1}} \hspace{1cm} (2) $$

and X is the mean, which is the average of the values, and we get it from the relationship:

$$ X = \frac{\sum f \times x}{\sum f} \hspace{1cm} (3) $$

The Med. is the value that mediates the values after arranging them in descending or descending order, and we get it from the relationship:

$$ Med = \frac{n}{2} \times \frac{f_1}{f_2 - f_1} \times L \hspace{1cm} (4) $$

The Mode, which is the most frequent, and we get it from the relationship: Mod. = A+ x

$$ \frac{x}{l - x} = f - f_1 \hspace{1cm} (5) $$

and Skewness by mode SK1, and it shows the torsion of the graphic curve from the normal distribution curve, to indicate the direction of the phenomenon to the right, which is a positive torsion, or to the left, which is a negative torsion, and we get it from the relationship:

$$ SK_1 = \frac{X - Mod.}{S} \hspace{1cm} (6) $$

and Skewness by med. SK2. And we get it from the relation:

$$ SK_2 = \frac{X - Med.}{S} \hspace{1cm} (7) $$

Pearson’s Correlation Coefficient:

$$ r = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sqrt{\left(\sum x^2 - \frac{\left(\sum x\right)^2}{n}\right)\left(\sum y^2 - \frac{\left(\sum y\right)^2}{n}\right)}} \hspace{1cm} (8) $$

Most thyroid function tests are performed on serum and are based on automated assays: currently total T4 and T3 (TT4 and TT3) concentrations are measured by competitive immunoassay methods employing immunofluorescence or chemiluminescence, but since several conditions (drugs, pregnancy, nonthyroidal illness, genetic alterations),[30]

![Fig.1. Shows the high and low cases of thyroid hormone in different age groups.](image)

The percentage of infection to total cases is 10.5%.
Fig. 2. Shows the ratio of healthy cases to infected cases.

Fig. 3. Shows the high and low cases of thyroid hormone in different age groups of women.

Fig. 4. Shows the high and low cases of thyroid hormone in different age groups of males.

Pearson coefficient for cases of high levels of thyroid hormone in males and females = 0.02

Pearson coefficient for cases of low levels of thyroid hormone in males and females = -0.03

Table 1. Shows the results of the statistical processes for the high and low cases for both males and females.

<table>
<thead>
<tr>
<th>(SI)</th>
<th>S</th>
<th>X</th>
<th>CV%</th>
<th>Mod.</th>
<th>Med.</th>
<th>SK1</th>
<th>SK2</th>
</tr>
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<tbody>
<tr>
<td>M &amp; F</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>17.5</td>
<td>44</td>
<td>39.7</td>
<td>40.9</td>
<td>42.1</td>
<td>0.17</td>
<td>0.32</td>
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<tr>
<td>L</td>
<td>18.9</td>
<td>44</td>
<td>42.9</td>
<td>30.6</td>
<td>40.9</td>
<td>0.7</td>
<td>0.49</td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>16.2</td>
<td>42</td>
<td>38</td>
<td>41.4</td>
<td>45.3</td>
<td>0.06</td>
<td>-0.2</td>
</tr>
<tr>
<td>L</td>
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<td>41</td>
<td>37.5</td>
<td>37.1</td>
<td>30.7</td>
<td>0.25</td>
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<tr>
<td>M</td>
<td></td>
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</tr>
<tr>
<td>H</td>
<td>20.2</td>
<td>49</td>
<td>41.2</td>
<td>55</td>
<td>53.75</td>
<td>-0.29</td>
<td>-0.7</td>
</tr>
<tr>
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<td>60</td>
<td>46.1</td>
<td>55</td>
<td>56.6</td>
<td>0.18</td>
<td>0.36</td>
</tr>
</tbody>
</table>

3. RESULTS AND DISCUSSION

About 1272 samples of thyroid were taken from laboratories located in the Al-Wahat region / Libya in a period estimated at 2022. The results showed that there is a defect or disorder in the thyroid hormones in males and females; 133 cases out of a total of 1272 cases representing 10.5% as shown in Fig. 2, and 60% of them suffer from a rise in thyroid hormones. However, 40 suffer from a deficiency. The number of affected women was 108 cases, and the percentage of women with thyroid disorders reached 81% of those infected, while the number of infected cases of the males was 25, which is 19% of the affected cases. On the other hand, the percentage of women with a high thyroid hormone reached 48% and a decrease in thyroid hormone was 33%, however, the percentage of males with a high thyroid hormone reached 13% and a decrease in thyroid hormone was 6%. The patients were classified into females and males, with high and low thyroid hormone according to age groups. Frequency tables were made to study the cases, a statistical study was conducted to find out which age groups are susceptible to infection, and is there a correlation between women’s infection with adrenal glands? For goiter and infection of males, the tables and figures show the following:

Fig. 1. shows that the high and low percentages increase significantly in a way that is almost similar to the normal distribution from the age of 30 to 70 for all cases of thyroid gland disorder, with the mean = 44 years and S = 17.5 for high values and S = 18.9 for low values, with a close coefficient of difference of 39.7 and 42.9. The most common age (module) for high cases is 40 years and for low cases is 30 years. The SK1 in low cases was much higher than that of high cases, which indicates its continuity over a long period of time.

It is clear from Fig. 3. that the high levels of thyroid hormone are greater than the low levels, and that the mean in both cases is the age of about forty. The most common values for high cases are at 42 years, while in low cases they have about 37 years, and the same is the median in high cases. is about 45 years old, while in low values is about 30 years. The torsion coefficient is higher in low cases than in high cases, which makes the torsion negative. In other words, it turns to the left in high cases, while it turns to the right strongly in low values.

Fig. 4. shows that high levels of thyroid hormone are higher in males than low levels. The mean for high cases is 49 years, while in low cases it reaches 60 years, with S = 20.2 for high cases and S = 27.7 for low cases, which indicates heterogeneity.
of values. In low cases, SK1 of high values is negative, which indicates that injuries occur at older ages, unlike women who suffer from infection at lower ages and more numbers than men.

4. CONCLUSION

This study concluded that women are more likely to suffer from thyroid disorders than men, where the incidence rate was about 80% for women while about 20% for men. This defect appears in them at an early age 30 to 40 years compared to men with an average age of 50 to 60 years. However, there was no association between high or low cases in men and women.

5. RECOMMENDATIONS

1. We recommend the need to conduct laboratory tests to detect the extent of activity or inactivity of the thyroid gland, especially for women, due to the negative effects of hypothyroidism or hyperactivity on them.

2. Conducting periodic analyzes of the thyroid gland when there are symptoms of hyperactivity or lethargy, or if there are no symptoms, in order to take precaution and treat it early and avoid its bad effects, especially on women.

3. Eat foods that contain iodine in cases of hypothyroidism to stimulate the production of its hormones.

6. REFERENCES


