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**The Concept of Goiter Patients Regarding
the Goiter, In Al Mesiktab Community
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Verse:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ لَا يُكَلِّفُ اللَّهُ نَفْسًا إِلَّا وُسْعَهَا لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لَا تُؤَاخِذْنَا
إِن نَسِينَا أَوْ أَخْطَأْنَا رَبَّنَا وَلَا تَحْمِلْ عَلَيْنَا إصْرًا كَمَا حَمَلْتَهُ عَلَى الَّذِينَ
مِن قَبْلِنَا رَبَّنَا وَلَا تَحْمِلْنَا مَا لَا طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَارْحَمْنَا أَنْتَ
مَوْلَانَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ ﴾ 286 ﴿﴾

صدق الله العظيم

سورة البقرة - (آية 268)



DEDICATION

To all member of my family

Mainly my kind mother and father

To my husband Omer

*To my sister Afrah and my brother Saif Al-
Eslam*

To my all friends

To my all teachers and doctors along my life

To my college

ACKNOWLEDGMENTS

I would like to acknowledge the contributions to the completion of this research, also I would like to thank

Dr. Suleman Al Kamil Ahmed

His encourage and support, enabled me to develop an understanding of the subject. At lastly, I offer my regards and blessings to Shendi University especially to staff faculty of Nursing and all of those who supported me in any step during the completion of the study.

المخلص

هذه الدراسة هي دراسة وصفية مقطعية تمت بمنطقة المسيكتاب شمال مدينة شندي في الفترة من أغسطس إلى ديسمبر 2016م حيث كان الغرض من الدراسة معرفة مفهوم مرضى تضخم الغدة الدرقية عن هذا المرض.

تم أخذ 65 عينة من مرضى تضخم الغدة الدرقية، حيث جمعت المعلومات عن طريق الاستبيان ومن ثم تحليلها وعرضها في جداول ورسوم بيانية، والتي كان من أهم نتائجها قلة المعرفة بأهمية التغذية وملح اليود والأغذية البحرية في حدوث مرض الغدة الدرقية ومضاعفات هذا المرض.

غالبية المرضى لديهم أعراض تضخم الغدة الدرقية في الرقبة ومعظم الغدة تكون متضخمة. أما بالنسبة لتضخم الغدة الدرقية هذا التضخم كبير جداً لدرجة انه يضغط على القصبة الهوائية ثلثاً المرضى لديهم هذه الأعراض، بشأن حجم تضخم الغدة الدرقية 52% من المرضى هذا الحجم ثابت.

هذه الدراسة تظهر أن (71%) من المرضى لديهم أعراض وعلامات نقص الغدة الدرقية وحوالي (62%) من المرضى قاموا بالفحص الهرموني. (72%) من المرضى قاموا بأخذ الأدوية لمعالجة هذا المرض، (63%) من المرضى لديهم هذا المرض في الأسرة.

وفيما يتعلق باستخدام المكملات الغذائية أو الملح المؤيد (83%) من المرضى لا يستخدمونها و(78%) من المرضى يأكلون السمك.

وأوصت هذه الدراسة بأنشاء محاضرات لأعطاء مزيد معلومات عن مرض تضخم الغدة الدرقية للمجمع المحلى بمنطقة المسيكتاب ومحلية شندي، من الأطباء والممرضين من خلال وسائل الأعلام التي توصف مسببات تضخم الغدة الدرقية والوقاية منه وتوفير معلومات حول أهمية معالجة تضخم الغدة الدرقية.

Abstract

This descriptive cross sectional study was conducted in Al Mesiktab area in northern city of Shendi in the period from August to December 2016, to identify the concept of patients having goiter regarding goiter it self.

This included 65 patients, the information was collected through the questionnaire and then analyzed and presented in tables and graphs.

The findings of this study were the lack of knowledge about important of nutrition, iodine salt and sea foods in occurrence of goiter and complications of this disease.

Majority of patients have local neck symptom of goiter. Regarding the goiter is so large as to cause symptom by compressing to the trachea the two thirds of patient were have. About the size of goiter 52% of the patients its size is constant.

This study shows that (71%) of patients have signs and symptoms of hypothyroidism and about (62%) of patients done hormonal test.

72% of patients take medications to treat this disease and 63% of patients have family history of goiter.

Regarding the use of diet with supplements or iodized salt 83% of patients does not use and about taking of sea foods 78% of patients take fish.

This study recommended that, the establishment of lecture that give more information about goiter to local community in Al Mesiktab area and Shendi locality. From the doctors and nurses through the mass media such as describes the provision of the means of etiology and prevention of goiter and provide more information about the important of treatment of goiter.

List of contents

<i>No. of content</i>	<i>Contents</i>	<i>No. of page</i>
1	الآية	I
2	Dedication	II
3	Acknowledgement	III
4	Arabic abstract	IV
5	English abstract	V
6	List of contents	VI
7	List of tables	VIII
8	List of figures	IX
<i>Chapter One</i>		
10	Introduction	1
11	Justification	2
12	Objectives	3
<i>Chapter Two</i>		
13	Literature review	4
2.1	Definition	4
2.2	Pathophysiology and etiology of goiter	4
2.3	Causes of goiter	6
2.4	Risk factors	7
2.5	Signs and symptoms of goiter	8
2.6	Morphology	8
2.7	Type of goiter	9
2.8	Development of goiter	10
2.9	Estimation of the thyroid size	11
2.10	Goiter and acute airway obstruction	11
2.11	Tests and diagnosis of goiter	12
2.12	Therapeutic interventions for goiter	14
2.13	Treatments and drugs	14
2.14	Medical care	15
2.15	Surgical care	16
2.16	Complications of goiter	17
2.17	Prevention of goiter	17
<i>Chapter Three</i>		

14	Methodology	19- 20
<i>Chapter Four</i>		
15	Results	21 – 32
<i>Chapter Five</i>		
16	Discussion	33
17	Conclusion	37
18	Recommendations	38
<i>Chapter Six</i>		
19	References	39
20	Appendix	40-42

List of tables

Table Title	No of page
(1) Distribution of study group according to their educational level	22
(2) Distribution of study group according to their duration of goiter	22
(3) Distribution of study group according to their regular follow up	22
(4) Distribution of study group according to their local symptom observed in the patients	24
(5) Distribution of study group according to increase size of goiter	24
(6) Distribution of the patient's goiter is so large as to cause compressing to the trachea	24
(7) Distribution of study group according to their accurate investigation	25
(8) Distribution of study group according to the goiter growth pattern	26
(9) Distribution of study group according to their classification of goiter	26
(10) Distribution of study group according to their nutrition which caused goiter	27
(11) Distribution of study group according to their using of diet and iodized salt	28
(12) Distribution of study group according to their eating (taking fish)	28
(13) Distribution of study group according to their using complementary medicine	28
(14) Distribution of study group according to their family history with goiter	29

(15) Cross tabulation between the age and the duration of goiter	30
(16) Cross tabulation between the education level and the patient use of diet and iodized salt	31
(17) Cross tabulation between the size of goiter and the type of treatment patient taken	32

List of figures

Figures Title	No of page
(1) Distribution of study group according to their gender	22
(2) Distribution of study group according to their age	22
(3) Distribution of study group according to their signs and symptoms of goiter	23
(4) Distribution of study group according to their types of goiter	24
(5) Distribution of study group according to their treatment	26
(6) Distribution of study group according to their complications of goiter	26

Chapter One

Introduction

Justification

Objectives

1.1. Introduction

Enlargement of the thyroid (goiter) is relatively common. Goiter refers to enlargement of the thyroid gland, it can enlarge when it is inefficient in making thyroid hormones, inflamed, or occupied by tumors. Thyroid gland enlargement can be generalized and smooth, a so called diffuse goiter; or it can become larger due to growth of one or more discrete lumps (nodules) within the gland, a nodular goiter. ⁽¹⁾

The thyroid may contain just one nodule (solitary thyroid nodule or uninodular goiter) or several of them (multinodular goiter). Thyroid nodules can be solid if they are comprised of thyroid or other cells or an accumulation of stored thyroid hormone called colloid. When nodules contain fluid, they are called cystic nodules. These can be completely fluid filled (simple cysts), or partly solid and partly fluid, (complex cysts). ⁽¹⁾

Most goiters are caused by deficiency of iodine in the diet. Iodine is a substance found in shellfish and iodine salt. Enlargement of the thyroid gland that may increase from about 20grams to hundreds of grams in human adult. ⁽²⁾

A goiter may be associated with a hyperthyroid, hypothyroid, or euthyroid state. The thyroid gland may enlarge in response to increased TSH levels. TSH is elevated in response to low TH, iodine deficiency, pregnancy, or viral, genetic, or other conditions. ⁽⁴⁾

Some foods and medications are goitrogens. These substances interfere with the body's use of iodine and include such foods as turnips, cabbage, broccoli, horseradish, cauliflower, and carrots. Some goitrogenic medications include propylthiouracil, sulfonamides, lithium, and salicylates (aspirin). ⁽⁴⁾

1.2. Justification

Goiter is a common medical problem in people, although the frequency of the different causes of goiter has not been well defined. To assess the frequency of the diverse etiologies of goiter in adult patients aged 15 years and older.

This descriptive study was carried out to verify the knowledge of goiter to the patients in Al Mesiktab community.

There is no previous study done about goiter in Al Mesiktab community.

1.3. Objectives

1.3.1. General objective:

To identify the concept of goiter in the patients of Al Mesiktab community.

1.3.2. Specific objectives:

1. To identify the knowledge of patients about the causes, signs and symptoms and complications of goiter.
2. To identify type of treatment should be used for goiter.
3. To find out association between the factors related to goiter.

Chapter Two

Literature Review

2. Literature review

2.1. Definition:

A goitre (British English) or goiter (American English) (from the Latin gutteria, Struma) is the swelling of the neck or larynx resulting from enlargement of the thyroid gland (thyromegaly), associated with a thyroid gland that is not functioning properly. ⁽²⁾

The normal thyroid gland is impalpable. The term goitre (from the Latin guttur = the throat) is used to describe generalized enlargement of the thyroid gland. ⁽⁴⁾

2.2. Pathophysiology and etiology of goiter:

Enlargement of the thyroid gland is called a goiter. The thyroid gland may enlarge in response to increased thyroid-stimulating hormone (TSH) levels. TSH is elevated in response to low thyroid hormone (TH), iodine deficiency, pregnancy, viral, genetic, or other conditions. When a goiter is caused by iodine deficiency or other environmental factors, it is called an endemic goiter. . ⁽⁵⁾

Some foods and medications are goitrogens. These substances interfere with the body's use of iodine and include such foods as turnips, cabbage, broccoli, horseradish, cauliflower, and carrots. . ⁽⁵⁾

Some goitrogenic medications include propylthiouracil, sulfonamides, lithium, and salicylates (aspirin). A goiter may be associated with a hyperthyroid, hypothyroid, or euthyroid state. Goiter that occurs with hyperthyroidism is sometimes called a toxic goiter. Once the cause of the goiter is removed, the gland usually returns to normal size. ⁽⁵⁾.

The term "goiter" simply refers to the abnormal enlargement of the thyroid gland. It is important to know that the presence of the goiter does not necessarily mean that the thyroid gland is malfunctioning. A goiter can occur in a gland that is producing too much hormone (hyperthyroidism), too little hormone (hypothyroidism), or the correct amount of hormone (euthyroidism). A goiter

indicates there is a condition present which is causing the thyroid to grow abnormally. ⁽⁶⁾

The thyroid gland is a butterfly-shaped organ located in the lower neck anterior to the trachea. It consists of two lateral lobes connected by an isthmus. The gland is about 5 cm long and 3 cm wide and weighs about 30 g. The blood flow to the thyroid is very high (about 5 mL/min per gram of thyroid tissue), about five times the blood flow to the liver. This reflects the high metabolic activity of the thyroid gland. The thyroid gland produces three hormones: thyroxine (T4), triiodothyronine (T3), and calcitonin. Thyroxine and triiodothyronine are referred to collectively as thyroid hormone. ⁽⁷⁾

2.2.1. Thyroid Hormone:

The two separate hormones, thyroxine (T4) and triiodothyronine (T3), that are produced by the thyroid gland and that make up thyroid hormone, are amino acids that have the unique property of containing iodine molecules bound to the amino acid structure. T4 contains four iodine atoms in each molecule, and T3 contains only three. These hormones are synthesized and stored bound to proteins in the cells of the thyroid gland until needed for release into the bloodstream. About 75% of bound thyroid hormone is bound to thyroxine-binding globulin (TBG); the remaining bound thyroid hormone is bound to thyroid-binding prealbumin and albumin. ⁽⁷⁾

2.2.2. Regulation of thyroid hormone

The secretion of T3 and T4 by the thyroid gland is controlled by thyroid-stimulating hormone (TSH, or thyrotropin) from the anterior pituitary gland. TSH controls the rate of thyroid hormone release.

In turn, the level of thyroid hormone in the blood determines the release of TSH. If thyroid hormone concentration in the blood decreases, the release of TSH increases, which causes increased output of T3 and T4. This is an example of negative feedback. ⁽⁷⁾

Thyrotropin-releasing hormone (TRH), secreted by the hypothalamus, exerts a modulating influence on the release of TSH from the pituitary.

Environmental factors, such as a decrease in temperature, may lead to increased secretion of TRH, resulting in elevated secretion of thyroid hormones. ⁽⁷⁾

2.2.3. Function of thyroxine and triiodothyronine:

The primary function of the thyroid hormone is to control the cellular metabolic activity. T4, a relatively weak hormone, maintains body metabolism in a steady state. T3 is about five times as potent as T4 and has a more rapid metabolic action. These hormones accelerate metabolic processes by increasing the level of specific enzymes that contribute to oxygen consumption and altering the responsiveness of tissues to other hormones. The thyroid hormones influence cell replication and are important in brain development. Thyroid hormone is also necessary for normal growth. The thyroid hormones, through their widespread effects on cellular metabolism, influence every major organ system. ⁽⁷⁾

2.3. Causes of goiter:

- One of the most common causes of goiter formation worldwide is iodine deficiency. While this was a very frequent cause of goiter in the United States many years ago, it is no longer commonly observed. The primary activity of the thyroid gland is to concentrate iodine from the blood to make thyroid hormone. The gland cannot make enough thyroid hormone if it does not have enough iodine. Therefore, with iodine deficiency the individual will become hypothyroid. Consequently, the pituitary gland in the brain senses the thyroid hormone level is too low and sends a signal to the thyroid. This signal is called thyroid stimulating hormone (TSH). As the name implies, this hormone stimulates the thyroid to produce thyroid hormone and to grow in size. This abnormal growth in size produces what is termed a "goiter". Thus, iodine deficiency is one causes of goiter development. Wherever iodine deficiency is common, goiter will be common. It remains a common cause of goiters in other part of the world.
- Hashimoto's thyroiditis a more common causes of goiter formation in the United States. This is an autoimmune condition which there is destruction of the thyroid gland by one's own immune system. As the gland becomes

more damage, it is less able to make adequate supplies of thyroid hormone. The pituitary gland senses a low thyroid hormone level and secretes more TSH to stimulate the thyroid. This stimulation causes the thyroid to grow, which may produce a goiter.

- Another common cause of goiter is Graves' disease. In this case, one's immune system produces a protein, called thyroid stimulating immunoglobulin (TSI). As with TSH, TSI stimulates the thyroid gland to enlarge producing a goiter. However, TSI also stimulates the thyroid to make too much thyroid hormone (causes hyperthyroidism). Since the pituitary senses too much thyroid hormone, it stops secreting TSH. In spite of this the thyroid gland continues to grow and make thyroid hormone. Therefore, Graves' disease produces a goiter and hyperthyroidism.
- Multinodular goiters are other common causes of goiters. Individuals with the disorder have one or more nodules within the gland which causes thyroid enlargement. This is often detected as a nodular feeling gland on physical exam. Patients can present with a single large nodule or with multiple smaller nodules in the gland when first detected. Thus, in early stages of multinodular goiter with many small nodules, the overall size of the thyroid may not be enlarged yet. Unlike the other goiters discussed, the causes of this type of goiter are not well understood.

In addition to the common causes of goiter, there are many other less common causes, some of these are due to genetic defects, others are related to injury or infections in the thyroid, and some are due to tumors (both cancerous and benign tumors).⁽⁶⁾

2.4. Risk factors:

Goiters can affect anyone. They may be present at birth and occur at any time throughout life, although they're more common after age 40. Some common risk factors for goiter include:

- **A lack of dietary iodine:** People living in areas where iodine is in short supply and who don't have access to iodine supplements are at high risk of goiter.
- **Being female:** Because women are more prone to thyroid disorders, they're also more likely to develop goiters.
- **Your age:** Your chances of developing a goiter increase with age.
- **Medical history:** A personal or family history of autoimmune disease increases risk for develop goiter.
- **Pregnancy and menopause:** For reasons that aren't entirely clear, thyroid problems are more likely to occur during pregnancy and menopause.
- **Certain medications:** Some medical treatments, including immunosuppressant's, antiretrovirals, the heart drug amiodarone (Cordarone, Pacerone, others) and the psychiatric drug lithium (Lithobid, others), increase your risk.
- **Radiation exposure:** Your risk increases if you've had radiation treatments to your neck or chest area or you've been exposed to radiation in a nuclear facility, test or accident. ⁽¹⁰⁾

2.5. Signs and symptoms of goiter:

The thyroid gland is enlarged, and swelling may be apparent at the base of the neck. Alternatively, it may enlarge posterior, which can interfere with swallowing or breathing. The patient may have:

- ✓ Full sensation in the neck.
- ✓ Symptoms of hypothyroidism.
- ✓ Symptoms of hyperthyroidism. ⁽⁵⁾

2.6. Morphology:

Regarding morphology, goiters may be classified either as the growth pattern or as the size of the growth:

2.6.1. Growth pattern:

- ✓ Uninodular goitre: can be either inactive or a toxic nodule

- ✓ Multinodular goitre: can likewise be inactive or toxic, the latter called toxic multinodular goitre
- ✓ Diffuse goitre: the whole thyroid appearing to be enlarged. ⁽²⁾

2.6.2. Size:

- ✓ Class I (palpation goitre): in normal posture of the head, it cannot be seen; it is only found by palpation.
- ✓ Class II: the goitre is palpable and can be easily seen.
- ✓ Class III: the goitre is very large and is retrosternal; pressure results in compression marks. ⁽²⁾

2.7. Types of goiter:

1- Iodine deficiency (endemic goiter):

Causes:

- ❖ Lack of sufficient dietary iodine intake.

Signs and symptoms:

- ❖ Thyroid gland enlargement (goiter).
- ❖ Normal or underactive thyroid (hypothyroidism).

2- Graves disease (diffuse toxic goiter):

Causes:

- Autoimmune stimulation of the thyroid gland.

Signs and symptoms:

- Goiter.
- Hyperthyroidism.

3- Autoimmune thyroiditis (Hashimoto, chronic lymphocytic):

Causes:

- Persistent immune system inflammation of person's own thyroid.

Signs and symptoms:

- Goiter
- Hyperthyroidism

4- Subacute thyroiditis (painful, de Quervain):

Causes:

- Viral infection.

Signs and symptoms:

- Painful, tender and swollen gland.
- Malaise, fever, chills, and night sweats.
- Thyrotoxicosis, often followed by hypothyroidism

5- Toxic adenoma and toxic multinodular goiter:

Causes:

- Benign thyroid tumor (s)

Signs and symptoms:

- Nodular goiter.
- Hyperthyroidism.

6- Goiter and thyroid nodules suspicious for malignancy:

Causes:

- Malignant thyroid tumors.

Signs and symptoms:

- No symptoms.
- Local neck symptoms.
- Symptoms of tumor spread. ⁽¹⁾

2.8. Development of goiter:

The preceding discussion on the production and regulation of the thyroid hormone provides the framework for understanding the production of goiter as a result of iodine deficiency. Although not the only cause, iodine deficiency is the primary cause of goiter. Goitrogens such as thiocyanates that can enhance the effect of iodine deficiency are referred to as secondary factors. ⁽⁸⁾

The basic effect of iodine deficiency is to interfere with the production of the thyroid hormone because iodine is an essential constituent of the T4 and T3 molecules. The lowering of output from the thyroid leads to a fall in the blood levels of T4 but to some increase in T3 (the less iodinated hormone is produced preferentially in iodine deficiency). ⁽⁸⁾

The fall in the level of T4 leads to increase in TSH output from the pituitary. TSH increase the uptake of iodide by the thyroid with increased turnover associated with hyperplasia of the cell of the thyroid follicles. The reserves of colloid containing thyroglobulin are gradually used up so that the gland has a much more cellular appearance than normal. The size of the gland increases with the formation of a goiter. Enlargement is regarded as significant in the human when the size of the lateral lobes is greater than the terminal phalanx of the thumb of the person examined. More precise measurement can now be made using Ultrasonography. ⁽⁸⁾

2.9. Estimation of the thyroid size:

- ❖ Stage 0: No goiter
- ❖ Stage 1a: Goiter detectable
- ❖ Stage 1b: Goiter palpable and visible only when the neck is fully extended. This stage also includes nodular gland, even if not goitrous.
- ❖ Stage 2: Goiter visible with the neck in normal position, palpation is not needed for diagnosis.
- ❖ Stage 3: Very large goiter that can be recognized at a considerable distance.

In case of doubt between any two of these stages, the lower should be recorded.

The total goiter rate is the prevalence of stage 1 to 3, the visible goiter rate is the prevalence of stage 2 to 3. This classification is appropriate to field surveys for public health purposes. For clinical purposes, more precise information can be obtained by other techniques including scintigraphy and sonography. ⁽⁸⁾

2.10. Goiter and acute airway obstruction:

Large goiters, weighing 150 g or more, can cause some degree of tracheal obstruction, especially if they are substernal in location. Tracheal compression obstructing up to 75% of the tracheal lumen often remains asymptomatic. Although dyspnea on exertion has been attributed to goiter, the symptoms are

often only nocturnal, manifesting as stridor or, when more severe, as sleep apnea.

This problem can be confirmed by x-ray views of the trachea at rest and during a reverse Valsalva maneuver and by sleep studies.

Growth of the goiter would have to be extensive to cause direct tracheal compression. In Riedel's Struma, there is tracheal cartilage destruction by fibrous invasion, which also can cause bilateral vocal cord paralysis.

Several case reports have been published describing the acute presentation of tracheal obstruction associated with goiter. Management of these patients is somewhat difficult because emergency tracheostomy may be difficult to perform owing to interference by the thyroid gland.

The use of small endotracheal tubes and immediate subtotal thyroidectomy should reduce the need for tracheostomy. It should be noted that subtotal thyroidectomy may not be successful in the presence of tracheomalacia, which may necessitate prosthetic supports. In some instances, a simple division of the thyroid isthmus may be sufficient to relieve the symptoms. Although not particularly useful in the acute care setting, I therapy can be effective in the long term in elderly patients with large, compressive goiters. ⁽⁹⁾

2.11. Tests and diagnosis of goiter:

As mentioned earlier, the diagnosis of goiter is usually made at the time of a physical examination when an enlargement of the thyroid is found. However, the presences of a goiter indicate there is an abnormality of the thyroid gland. Therefore, it is important to determine the causes of the goiter. As a first step, you will likely have thyroid function test to determine if your thyroid is underactive or overactive. Any subsequent tests performed will be dependent upon the results of the thyroid function tests. ⁽⁶⁾

If the thyroid is diffusely enlarged and they not hyperthyroid, the doctor will likely precede with tests to help the diagnose of Graves disease. If you are hypothyroid, you may have Hashimoto's thyroiditis and you may get additional blood tests to confirm this diagnosis. Other tests used to help to know the cause

of the goiter may include a radioactive iodine scan, thyroid ultrasound, or a fine needle aspiration biopsy. ⁽⁶⁾

Your doctor may discover an enlarged thyroid gland simply by feeling your neck and having you swallow during a routine physical exam. In some cases, your doctor may also be able to feel the presence of nodules.

Diagnosing goiter may also involve:

- **A hormone test:** Blood tests can determine the amount of hormones produced by the thyroid. If your thyroid is underactive, the level of thyroid hormone will be low. At the same time, the level of thyroid-stimulating hormone (TSH) will be elevated because your pituitary gland tries to stimulate your thyroid gland to produce more thyroid hormone.
- Goiter associated with an overactive thyroid usually involves a high level of thyroid hormone in the blood and a lower than normal TSH level.
- **An antibody test:** Some causes of goiter involve production of abnormal antibodies. A blood test may confirm the presence of these antibodies.
- **Ultrasonography:** A wand-like device (transducer) is held over your neck. Sound waves bounce through your neck and back, forming images on a computer screen. The images reveal the size of your thyroid gland and whether the gland contains nodules that your doctor may not have been able to feel.
- **A thyroid scan:** During a thyroid scan, you'll have a radioactive isotope injected into the vein on the inside of your elbow. You then lie on a table with your head stretched backward while a special camera produces an image of your thyroid on a computer screen. The time needed for the procedure may vary, depending on how long it takes the isotope to reach your thyroid gland. Thyroid scans provide information about the nature and size of your thyroid, but they're more invasive, time-consuming and expensive than are ultrasound tests.

- **A biopsy:** During a fine-needle aspiration biopsy, ultrasound is used to guide a needle into your thyroid to obtain a tissue or fluid sample for testing. ⁽¹⁰⁾

2.12. Therapeutic interventions for goiter:

Treatment is aimed at the cause. If goitrogens are suspected, the patient is given a list of foods to be avoided. If iodine deficiency is a problem, it is added to the diet with supplements or iodized salt. Hypothyroidism or hyperthyroidism is treated if indicated. Levothyroxine (Synthroid) may be given to reduce TSH levels via negative feedback. A thyroidectomy may be necessary if the gland is interfering with breathing or swallowing. ⁽⁵⁾

2.13. Treatments and drugs:

Goiter treatment depends on the size of the goiter, your signs and symptoms, and the underlying cause. Your doctor may recommend:

- **Observation:** If your goiter is small and doesn't cause problems, and your thyroid is functioning normally, your doctor may suggest a wait-and-see approach.
- **Medications:** If you have hypothyroidism, thyroid hormone replacement with levothyroxine (Levothroid, Synthroid) will resolve the symptoms of hypothyroidism as well as slow the release of thyroid-stimulating hormone from the pituitary gland, often decreasing the size of the goiter. For inflammation of the thyroid gland, your doctor may suggest aspirin or a corticosteroid medication to treat the inflammation. For goiters associated with hyperthyroidism, you may need medications to normalize hormone levels.
- **Surgery:** Removing all or part of your thyroid gland (total or partial thyroidectomy) is an option if you have a large goiter that is uncomfortable or causes difficulty in breathing or swallowing, or in some cases, if you have nodular goiter causing hyperthyroidism. Surgery is also

the treatment for thyroid cancer. You may need to take levothyroxine after surgery, depending on the amount of thyroid removed.

- **Radioactive iodine:** In some cases, radioactive iodine is used to treat an overactive thyroid gland. The radioactive iodine is taken orally and reaches your thyroid gland through your bloodstream, destroying thyroid cells. The treatment results in diminished size of the goiter, but eventually may also cause an underactive thyroid gland. Hormone replacement with the synthetic thyroid hormone levothyroxine then often becomes necessary, usually for life. ⁽¹⁰⁾

2.14. Medical care:

Small benign euthyroid goiters do not require treatment. The effectiveness of medical treatment using thyroid hormone for benign goiters is controversial. Large and complicated goiters may require medical and surgical treatment. Malignant goiters require medical and surgical treatment.

The size of a benign euthyroid goiter may be reduced with levothyroxine suppressive therapy. The patient is monitored to keep serum TSH in a low but detectable range to avoid hyperthyroidism, cardiac arrhythmias, and osteoporosis. The patient has to be compliant with monitoring. Some authorities suggest suppressive treatment for a definite time period instead of indefinite therapy. Patients with Hashimoto thyroiditis respond better.

Treatment of hypothyroidism or hyperthyroidism often reduces the size of a goiter.

Thyroid hormone replacement is often required following surgical and radiation treatment of a goiter. Use of radioactive iodine for the therapy of nontoxic goiter has been disappointing and is controversial.

Medical therapy of autonomous nodules with thyroid hormone is not indicated.

Ethanol infusion into benign thyroid nodules has not been approved in the United States, but it is used elsewhere.

Goiters with primary thyroid malignancy require levothyroxine replacement after surgery and radioactive iodine ablation. Metastatic lesions to the thyroid gland require treatment of the primary malignancy. Granulomatous and infectious etiologies for goiter require specific treatment depending on the underlying cause. ⁽¹⁰⁾

2.15. Surgical care:

Surgery is reserved for the following situations:

- Large goiters with compression.
- Malignancy.
- When other forms of therapy are not practical or ineffective.

Preoperatively, establish euthyroid state prior to surgical treatment. Evaluation must include the stability of the airway. This must be secured immediately if ventilatory status appears tenuous. Emergency surgical treatment of a goiter in a patient with hypothyroidism requires intravenous levothyroxine and glucocorticoids at stress doses.

Emergency surgical treatment of a goiter in a thyrotoxic patient requires antithyroid medications, beta blockers, and glucocorticoids at stress doses. Suppressing doses of iodine are helpful.

Intraoperative and postoperative management includes hemodynamic monitoring, which is important in patients with preoperative hyperthyroidism or hypothyroidism. Postoperative management also includes monitoring of serum calcium.

A literature review by Li et al indicated that total thyroidectomy is a safe procedure for the treatment of bilateral multinodular nontoxic goiter, demonstrating a lower recurrence rate than bilateral subtotal thyroidectomy. However, total thyroidectomy was also found to carry a significantly higher risk of postoperative transient hyperparathyroidism than did the other procedure.

A study by Khan et al indicated that in patients with retrosternal goiter, a transcervical surgical approach is preferable to a transthoracic procedure. The study, which employed the National Surgical Quality Improvement Program

(NSQIP) database, found that various postoperative morbidities, including those involving transfusions and unplanned intubations, were higher with the transthoracic approach. The data suggested that overall mortality might be increased as well with this procedure. ⁽¹⁰⁾

2.16. Complications of goiter:

- Dysphagia.
- Breathlessness.
- Change in voice.
- Dysphonia.
- Mediastinal enlargement. ⁽³⁾

2.17. Prevention of goiter:

There is not very much that you can do to prevent goiter other than to pay attention to your diet. If you are concerned about prevention it's necessary that you understand and are aware of the risk factors. A deficiency of iodine in the diet is the single largest cause of goiter worldwide, but this is less common in developed countries as most of us use iodized salt. In the United States, goiter is generally due to an under or over production of the thyroid hormones, or due to the development of nodules in the gland itself. Treatment naturally depends on the underlying cause, and also depends on the size of the goiter and symptoms it displays. Small goiters that are barely noticeable and cause no symptoms don't generally require any treatment.

If you study the risk factors you will understand that there is not much you can do by way of preventive measures, unless the cause is dietary.

- Iodine deficiency: If you live in an area where the dietary foods lack in iodine and if you don't have access to supplements then you could be at a high risk for goiter.
- Gender issues: Women being more prone to thyroid disorders are also at a higher risk of developing goiter.
- Aging: Once you reach your 50s, you are at a higher risk of goiter.

- Heredity: A family history with autoimmune diseases is another significant risk factor.
- Pregnancy and menopause: Thyroid problems have been found to develop after pregnancy or menopause, although the reason for this are not fully understood.
- Medications: Certain medications like anti-retroviral and immune-suppressants can increase your risk.
- Radiation: If you've been exposed to radiation, whether through treatments or through presence in a nuclear facility or because of an accident, you are at a higher risk.

The risk factors for goiter are therefore for the large part unavoidable and there is not much that can be done to prevent the condition. If you follow a healthy balanced diet and minimize exposure to controllable risk factors there should be nothing to worry about. In terms of your diet iodized salt, seaweed and other sea foods, particularly shellfish and shrimp, are rich in iodine. If your food sources are largely coastal then fruits and vegetables are also likely to contain iodine. In some cases however excess iodine is also a problem, so just make sure your diet is well balanced and healthy. Ask your doctor for medical alternatives if any treatments you are on increase the risk. ⁽¹¹⁾

Chapter Three

Methodology

3. Methodology

3.1. Study Design:

This is descriptive community based study that conducted from the period that extended from August to December 2016.

3.2. Study Area:

This research in the Al Mesiktab Area which is located northern Shendi city, in the river Nile State, most of population are farmers.

3.3. Study Population:

This study includes the patients with Goiter in Al Mesiktab Area.

3.4. Study Sampling:

(65) patient was included in this study, every patient available at the period of conducting this study, which including 61 of them were females and 4 were males. Every patient refused to participate in this study or not resident in the area was excluded.

3.5. Data Collection Tools:

This data was collected by questionnaire which contains 25 question, closed and open question.

3.6. Data Collection Technique:

This data was collected by the researcher within 1 week, and the questionnaire was distributed randomly to 65 Patient.

3.7. Data Analysis:

This data was analyzed by using Statistical Package for Social Science (SPSS) and manually simple statistical method and presented informs of tables and figures.

3.8. Ethical Consideration:

The study was approved to by the conducted by the research institute board of the faculty. Permission has been taken after explanation clearly and

verbally to the responder and the information should be used only of the purpose of the study and they have chance to stop any time they wishes.

Chapter Four

Results

4. Results

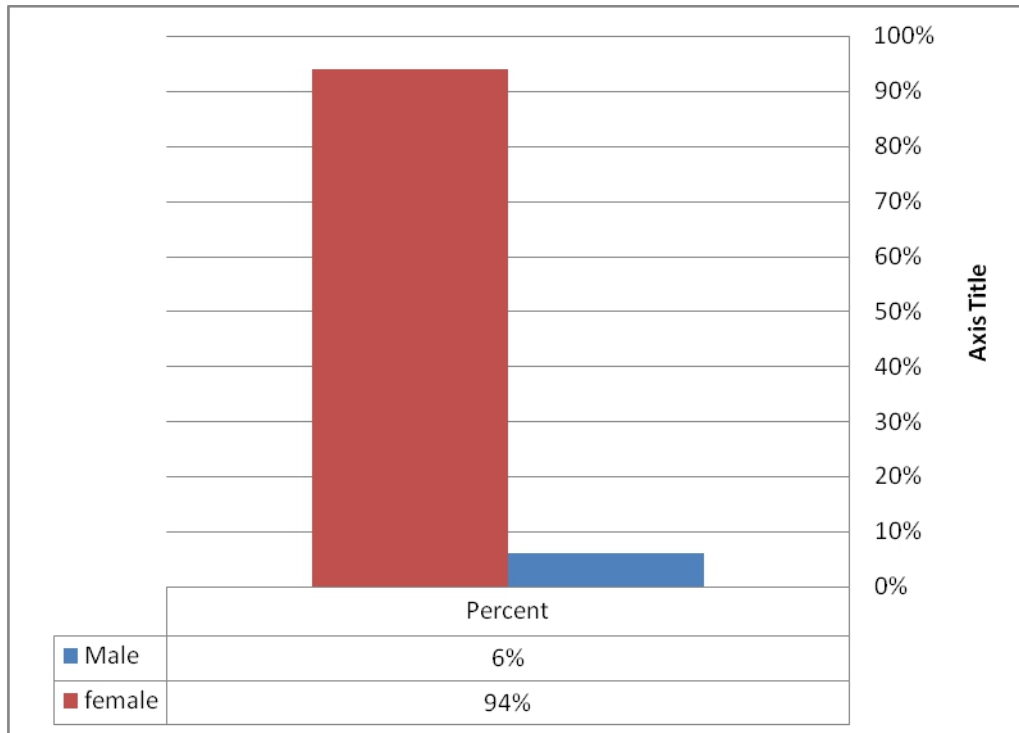


Figure Number (1): Distribution of study group according to their gender:

The above figure showed that (94%) of patients are female and (6%) are male.

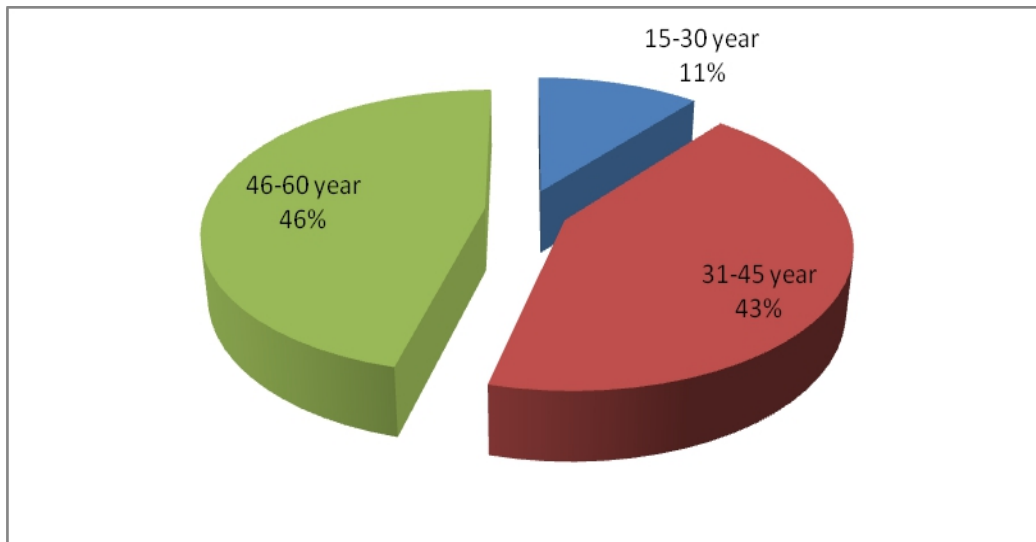


Figure Number (2): Distribution of study group according to their age:

The above figure shows that (11%) of patients between ages 15-30 year, (43%) of patients between age 31-45 year and (46%) of patients between age 46-60 year,

Table Number (1): Distribution of study group according to their educational level:

	Frequency	Percent
Literacy	11	17%
Primary	30	46%
Secondary	13	20%
University	11	17%
Total	65	100%

The above table shows that (17%) of patients are literacy, (46%) of patients are primary educational level, (20%) of patients are secondary educational level, and (17%) are university educational level.

Table Number (2): Distribution of study group according to their duration of disease (goiter):

	Frequency	Percent
Less than 1 year	0	0
1-3 year	7	11%
More than 3year	58	89%
Total	65	100%

The above table shows that no patients have duration of goiter less than 1 year, (11%) of patients goiter begin between 1-3 year and (89%) of patient's goiter begin more than 3 years.

Table Number (3): Distribution of study group according to their regular follow up:

	Frequency	Percent
Yes	64	98.5%
No	1	1.5%
Total	65	100%

The above table shows that (93%) of patients follow up with the doctor and (7%) of patient's do not.

Table Number (4): Distribution of study group according to their local symptom observed in the patients:

	Frequency	Percent
Yes	61	94%
No	4	6%
Total	65	100%

The above table shows that (94%) of patients have local neck symptom of goiter and (6%) of patient's do not have local neck symptom of goiter

Table Number (5): Distribution of study group according to increase size of goiter:

	Frequency	Percent
Increase	21	32%
Decrease	10	16%
Constant	34	52%
Total	65	100%

The above table shows that (32%) of patients the size of goiter in is going increase, (16%) of patient's the size of goiter in is going decrease and (52%) of patient's the size of goiter is constant.

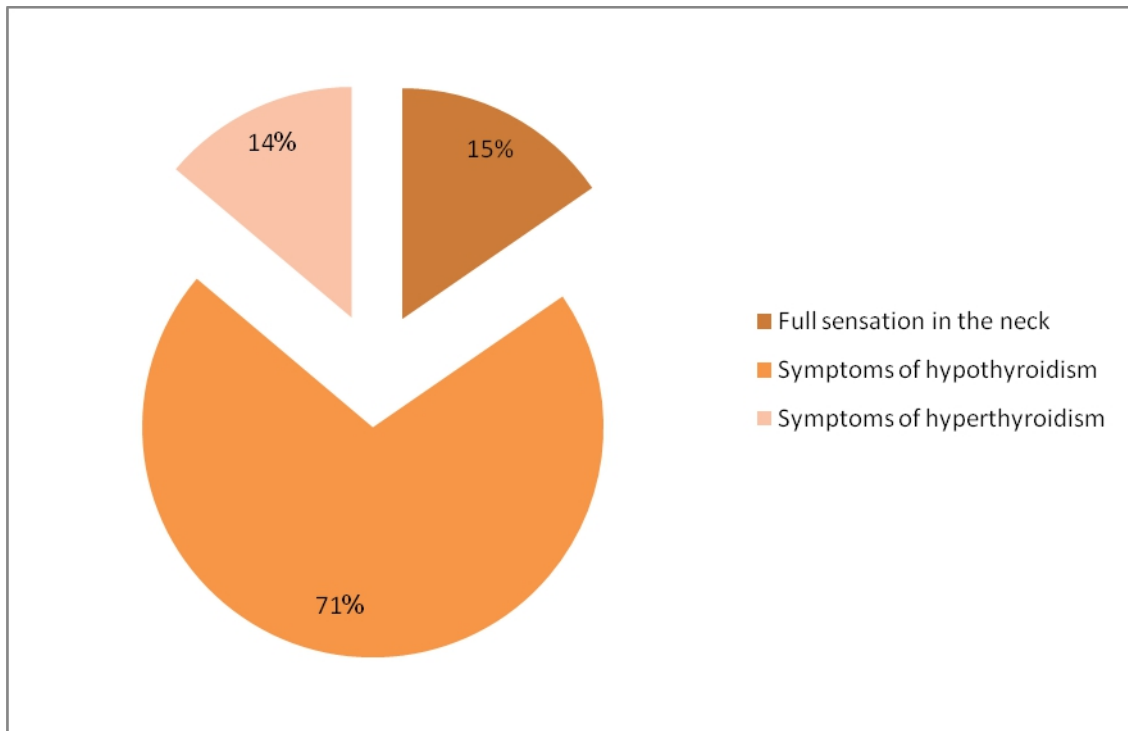


Figure Number (3): Distribution of study group according to their signs and symptoms of disease (goiter):

The above figure shows that (15%) of patients have full neck sensation, (71%) of patients have symptoms of hypothyroidism and 14% of patient's have symptoms of hyperthyroidism.

Table Number (6): Distribution of study group according to the sizeable which require compressing in the trachea:

	Frequency	Percent
Yes	21	32%
No	44	68%
Total	65	100%

The above table shows that (32%) of patients the goiter sizable which require compressing in the trachea and (68%) are not.

Table Number (7): Distribution of study group according to their accurate investigation:

	Frequency	Percent
Hormone test	63	97%
Antibody test	2	3%
Ultrasonography	15	23%
Thyroid scan	2	3%
Biopsy	3	5%

The above table shows that (97%) of patients done Hormone test, 3% of patient's done Antibody test, (23%) of patients done Ultrasonography, (3%) of patient's done Thyroid scan and (5%) of patient's done Biopsy.

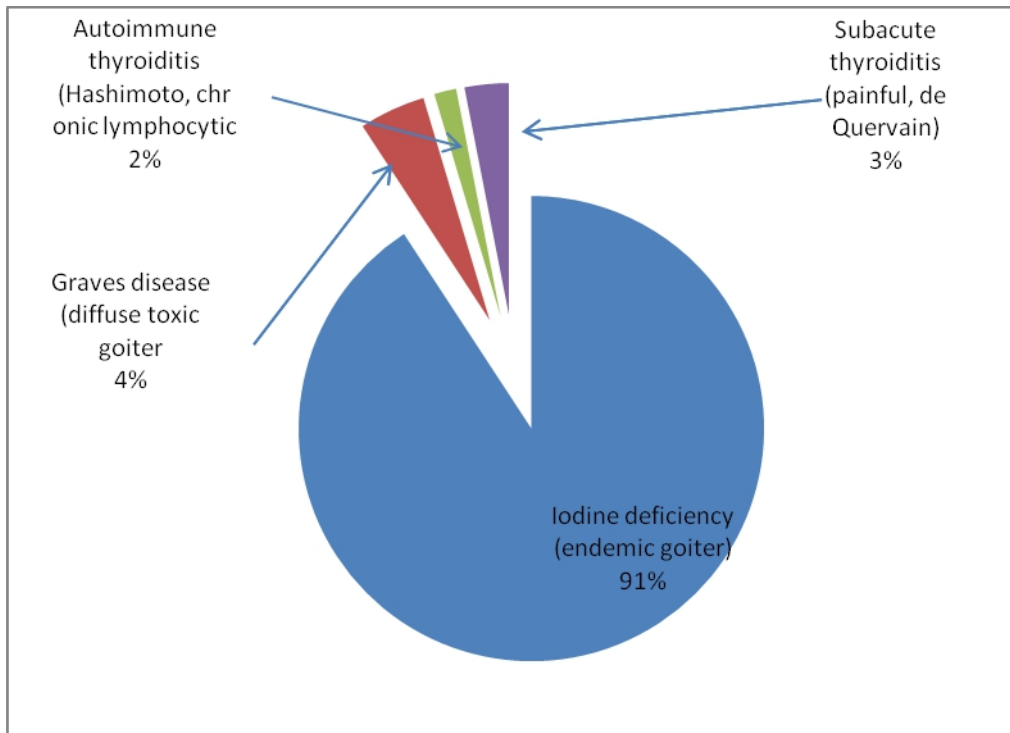


Figure Number (4): Distribution of study group according to their types of goiter:

The above figure showed that (91%) of patient's have Iodine deficiency goiter, (4%) are Graves disease goiter, (2%) are autoimmune thyroiditis goiter and (3%) are subacute thyroiditis goiter.

Table Number (8): Distribution of study group according to the goiter growth pattern:

	Frequency	Percent
Uninodular goiter: can be either inactive or a toxic nodule.	10	15%
Multinodular goiter: can likewise be inactive or toxic, the latter called toxic multinodular goiter	1	2%
diffuse goiter: the whole thyroid appearing to be enlarged	54	83%
Total	65	100%

The above table shows that (15%) of patients the growth pattern is Uninodular goiter, (2%) of patients growth pattern is Multinodular goiter and (83%) of patient's the growth pattern is diffuse goiter.

Table Number (9): Distribution of study group according to their classification of goiter:

	Frequency	Percent
Class I (palpation goiter): in normal posture of the head, it cannot be seen; it is only found by palpation	2	3%
Class II: the goiter is palpable and can be easily seen	45	69%
Class III: the goiter is very large and is retrosternal; pressure results in compression marks	18	28%
Total	65	100%

The above table shows that (3%) of patients have class I goiter size, (69%) of patients have class II goiter size and (28%) of patients have class III goiter size.

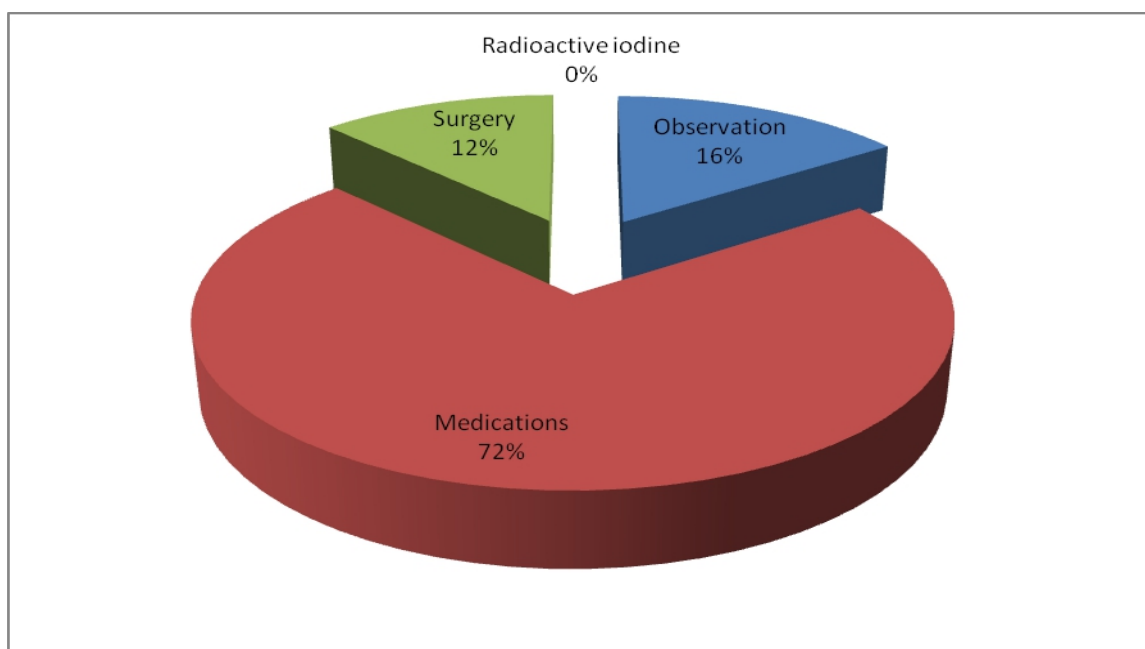


Figure Number (5): Distribution of study group according to their treatment:

The above figure shows that (16%) of patients just under observation, (72%) of patients take medications, (12%) of patients done surgery to remove the goiter and no patient take radioactive iodine to treat the goiter.

Table Number (10): Distribution of study group according to their nutrition which caused goiter:

	Frequency	Percent
Yes	29	45%
No	36	55%
Total	65	100%

The above table show that (45%) of patient's nutrition caused the goiter and (55%) are not.

Table Number (11): Distribution of study group according to their using of diet and iodized salt:

	Frequency	Percent
Yes	11	17%
No	54	83%
Total	65	100%

The above table shows that (17%) of patients use of diet with supplements or iodized salt and (83%) are not.

Table Number (12): Distribution of study group according to their eating (taking fish):

	Frequency	Percent
Yes	51	78%
No	14	22%
Total	65	100%

The above table shows that (78%) of patients takes fish and (22%) are not.

Table Number (13): Distribution of study group according to their using complementary medicine:

	Frequency	Percent
Yes	13	20%
No	52	80%
Total	65	100%

The above table shows that (20%) of patients use complementary medicine and (80%) are not.

Table Number (14): Distribution of study group according to their family history with goiter:

	Frequency	Percent
Yes	41	63%
No	24	37%
Total	65	100%

The above table show that (63%) of patients have family history of goiter and (37%) are not.

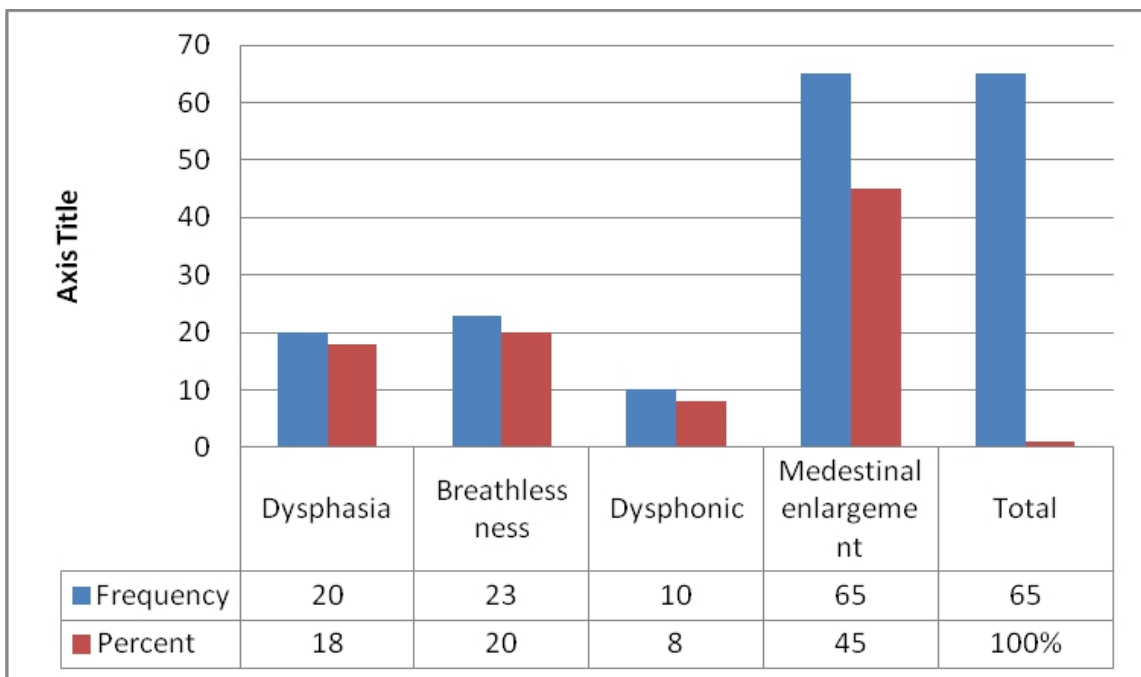


Figure Number (6): Distribution of study group according to their complications of goiter:

The above figure shows that (18%) of patients have dysphasia, (20%) have breathlessness, (8%) have dysphonic, and (100%) have medestinal enlargement.

Table Number (15): Cross tabulation between the age and the duration of goiter

The age		The period of goiter begin		Total	P value
		1-3 year	More than three year		
15-30	Count	1	6	7	0.614
	% of Total	1.5%	9.2%	10.8%	
31-45	Count	4	24	28	
	% of Total	6.2%	36.9%	43.1%	
46-60	Count	2	28	30	
	% of Total	3.1%	43.1%	46.2%	
Total	Count	7	58	65	
	% of Total	10.8%	89.2%	100.0%	

P value =0 .614

Table Number (16): Cross tabulation between the education level and the patient use of diet and iodized salt:

The education level		The patient use of diet with supplements or iodized salt		Total	P value
		Yes	No		
Literacy	Count	0	11	11	.006
	% of Total	0.0%	16.9%	16.9%	
Primary	Count	5	25	30	
	% of Total	7.7%	38.5%	46.2%	
Secondary	Count	0	13	13	
	% of Total	0.0%	20.0%	20.0%	
University	Count	6	5	11	
	% of Total	9.2%	7.7%	16.9%	
Total	Count	11	54	65	
	% of Total	16.9%	83.1%	100.0%	

P value =.006

Table Number (17): Cross tabulation between the classification of goiter and the type of treatment patient taken:

The size of goiter		The type of treatment patient taken			Total	P value
		Observation	Medications	Surgery		
Class 1	Count	2	0	0	2	.000
	% of Total	3.1%	0.0%	0.0%	3.1%	
Class 2	Count	7	37	1	45	
	% of Total	10.8%	56.9%	1.5%	69.2%	
Class 111	Count	1	10	7	18	
	% of Total	1.5%	15.4%	10.8%	27.7%	
Total	Count	10	47	8	65	
	% of Total	15.4%	72.3%	12.3%	100.0%	

P value = .000

Chapter Five

Discussion

Conclusion

Recommendations

5.1. Discussion

This study was conducted in Al Mesiktab community from the period extended from the August to December for patients having goiter, this study involves 61 female (94%) and 4 male (6%). These results agree with ⁽¹⁰⁾, which state that: women are more prone to thyroid disorders, they're also more likely to develop goiters. For reasons that aren't entirely clear, thyroid problems are more likely to occur during pregnancy and menopause.

This study clarified that most of study group (91%) their cause of goiter was iodine deficiency. This result agrees with ⁽²⁾ and previous study ⁽¹²⁾ which state that: today patients of both gender have goiter, they can affect anyone Worldwide, over 90% cases of goiter are caused by iodine deficiency, multinodular goiter is a common thyroid disorder. It is endemic in iodine deficient regions. It develops slowly over decades. Radiation, genetics, enzyme deficiencies, certain drugs and other diet factors have also been implicated in the causation of MNG. The pathogenesis has been divided into five stages. Autonomy of growth and function are responsible for clinical picture of MNG. Knowledge about these factors has lead to preventive interventions such as iodination of salt and has led to decreasing incidence of nodular goiter.

This study explained that most of study group (91%) their type of goiter was iodine deficiency. This result agrees with ⁽¹⁰⁾. Which state that: a deficiency of iodine in the diet is the single largest cause of goiter worldwide. People living in areas where iodine is in short supply and who don't have access to iodine supplements are at high risk of goiter.

Regarding the age of patients having goiter, this study explained that near to half of study group (46%) their age range between 46-60 year. These results agree with ⁽¹¹⁾. Which state that: once the patients reach 50s, they are at a higher risk of goiter.

This study clarified that most of study group (89%) their duration of goiter more than 3 years. This result agrees with ⁽¹⁰⁾. Which state that: goiters

can affect anyone; they may be present at birth and occur at any time throughout life, although they're more common after age 40, the chances of developing a goiter increase with age.

This study clarified that most of study group (94%) have local neck symptom of goiter, this result agrees with ⁽⁵⁾. Which state that: thyroid gland is enlarged, and swelling may be apparent at the base of the neck.

This study explained that most of study group (83%) have diffuse goiter, (2%) have multinodular goiter and (15%) have uninodular goiter, This results agree with ⁽²⁾. Which state that: the whole thyroid appearing to be enlarged, multinodular goiter can likewise be inactive or toxic, the latter called toxic multinodular goiter and uninodular goiter can be either inactive or a toxic nodule.

This study clarified that (3%) of study group their classification of goiter are Class I (palpation goiter), (69%) Class II and (28%) Class III. These results agree with ⁽²⁾. Which state that: Class I (palpation goiter): in normal posture of the head, it cannot be seen; it is only found by palpation, Class II the goiter is palpable and can be easily seen and Class III: the goiter is very large and is retrosternal; pressure results in compression marks.

Regarding the goiter is so large as to cause compressing to the trachea this study showed that more than two thirds of study group (68%) are have and about one third (32%) does not have, These results agree with ⁽⁹⁾. Which state that: growth of the goiter would have to be extensive to cause direct tracheal compression.

This study explained that more than half (52%) of the study group their size of goiter is constant, (32%) is increase and (16%) is decrease, these results agree with ⁽¹⁰⁾. Which state that: the size of goiter may be increase, decrease or constant, this refers to use of treatment of hypothyroidism or hyperthyroidism often reduces the size of a goiter.

This study showed that more than two third of study group (71%) have signs and symptoms of hypothyroidism, (14%) have symptoms of hyperthyroidism and (15%) have full sensation in the neck. These results agree with ⁽⁶⁾. Which state that: a goiter can occur in a gland that is producing too much hormone (hyperthyroidism), to little hormone (hypothyroidism), or the correct amount of hormone (euthyroidism). A goiter indicates there is a condition present which is causing the thyroid to grow abnormally.

This study clarified that more than half of study group (62%) done hormonal test, (3%) done antibody test, quadrant of study group (23%) done ultrasonography, (3%) done thyroid scan and (5%) done biopsy. These results agree with ⁽¹⁰⁾. Which state that: the blood tests can determine the amount of hormones produced by your thyroid and pituitary glands, some causes of goiter involve production of abnormal antibodies and blood test may confirm the presence of these antibodies, ultrasonography is images reveal the size of your thyroid gland and whether the gland contains nodules that your doctor may not have been able to feel, thyroid scan can provide information about the nature and size of your thyroid, but they're more invasive, time-consuming and expensive than are ultrasound tests. During a fine-needle aspiration biopsy, ultrasound is used to guide a needle into your thyroid to obtain a tissue or fluid sample for testing.

Regarding the type of treatment patient taken this study explained that more than two third of study group (72%) taking medications, (16%) just under observation and (12%) done surgery. These results agree with ⁽¹⁰⁾. Which state that: the patients have hypothyroidism, thyroid hormone replacement with levothyroxine (Levothroid, Synthroid) will resolve the symptoms of hypothyroidism as well as slow the release of thyroid-stimulating hormone from your pituitary gland, often decreasing the size of the goiter. For goiters associated with hyperthyroidism, you may need medications to normalize hormone levels. The patients put under observation if the goiter is small and

doesn't cause problems. Surgery do to removing all or part of your thyroid gland (total or partial thyroidectomy) is an option if you have a large goiter that is uncomfortable or causes difficulty breathing or swallowing, or in some cases, if you have nodular goiter causing hyperthyroidism. And no patient's take radioactive iodine to treat goiter.

This study clarified that more than half of study group (63%) have family history of goiter and more than one third (37%) does not have family history of goiter. These results agree with ⁽¹¹⁾. Which state that: a family history of goiter and autoimmune diseases is another significant risk factor of goiter.

Regarding the use of diet with supplements or iodized salt this study explained that most of study group (83%) does not use and just (17%) use it. This result disagrees with ⁽⁵⁾. Which state that: if iodine deficiency is a problem, it is added to the diet with supplements or iodized salt.

This study clarified that majority of study group take fish (78%) and (22%) does not taken. These results agree with ⁽¹¹⁾. Which state that: the sea foods, particularly shellfish and shrimp, are rich in iodine.

This study clarified that that (18%) of study group have dysphasia, (20%) have breathlessness, (8%) have dysphonic, and (100%) have medestinal enlargement. These results agree with ⁽³⁾. Which state that: complications of goiter are dysphagia, breathlessness, dysphonai and medestinal enlargement.

This study explained that were no significant between ages of study group and duration of goiter, because the P value more than 0.05. (P=.614).

This study explained that were high significant between the educational level of study group and use of diet and iodine salt, because the P value is less than 0.05 (P=.006).

This study explained that were high significant between type of treatment and size of goiter, because P value less than 0.05. (P=.000).

5.2. Conclusion

According to the finding of the study were concluded that:

This study explained that patients of both gender have goiter, they can affect anyone and most common in adult patients ⁽¹⁰⁾, but the goiter in this study is more occurs in female (94%) than male (6%). Most goiters are caused by deficiency of iodine in the diet. ⁽²⁾ the most common cause of goiter in this study is iodine deficiency. Most of patients the type of goiter is iodine deficiency.

This study explained that two third of patients have signs and symptoms of hypothyroidism.

This study clarified that that less than half of patients have dysphasia, breathlessness, dysphonic, and all patients in this study have medestinal enlargement.

Regarding the type of treatment patient taken two third of patients taken medications to treat goiter.

,

5.3. Recommendations

In the light of the results and conclusion this study recommended that:-

- Establishment of lectures to provided more information about goiter to the local community in Al Mesiktab area and Shendi locality, from the doctors and nurses through the mass media such as describes the provision of the means of etiology and prevention of goiter and provide information about important of treatment of goiter to prevent or reduce complications of goiter.
- patients should know more information about signs and symptoms of goiter , importance of follow up and take the suitable treatment.
- Periodic follow up with neck palpation is recommended for all patients.
- The patient should know the important of iodine salt and fish to prevent them self from the development of goiter.

Appendix

Reference

Questionnaire

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3\ Symptoms of hyperthyroidism. ()

14- The type of the tests patient done:

- 1\ Hormone test () 2\ Antibody test () 3\ Ultrasonography ()
4\ Thyroid scan () 5\ Biopsy ()

15- The type of goiter patient have:

- 1\ Iodine deficiency (endemic goiter) ()
2\ Graves disease (diffuse toxic goiter) ()
3\ Autoimmune thyroiditis (Hashimoto, chronic lymphocytic) ()
4\ Subacute thyroiditis (painful, de Quervain) ()
5\ Toxic adenoma and toxic multinodular goiter ()
6\ Goiter and thyroid nodules suspicious for malignancy ()

16- The goiter growth pattern in the patient:

- 1\ Uninodular goitre: can be either inactive or a toxic nodule. ()
2\ Multinodular goitre: can likewise be inactive or toxic, the latter called toxic multinodular goitre. ()
3\ Diffuse goitre: the whole thyroid appearing to be enlarged. ()

17- The size of goiter patient have :

- 1\ Class I (palpation goitre): in normal posture of the head, it cannot be seen; it is only found by palpation. ()
2\ Class II: the goitre is palpable and can be easily seen. ()
3\ Class III: the goitre is very large and is retrosternal; pressure results in compression marks. ()

18- The type of treatment patient taken :

- 1\ Observation () 2\ Medications ()
3\ Surgery () 4\ Radioactive iodine ()

19- The patient nutrition have relation to occurrence of goiter:

- 1\ Yes () 2\ No ()

20- The patient use of diet with supplements or iodized salt:

- 1\ Yes () 2\ No ()

