

Thyroid gland is a unique organ, has a natural avidity for iodine that isn't manifested in any other tissue of the body. Indeed, oral administration of I131 has been a commonly accepted procedure for treatment of benign and malignant conditions of the thyroid since the 1940s. Patients who will receive radioactive iodine RAI therapy should be provided by comprehensive information about it, to overcome their misconceptions, problems and needs. This book presents a study to assess patients' knowledge, needs and problems among patients undergoing RAI therapy. The study revealed that the thyroid patients had lack of knowledge and need to know about RAI treatment and its precautions, also they complained from physical, psychological, social and financial problems and reported they need help in many areas of them. The nuclear nurse should provide a comprehensive assessment of patients' problems and needs and their informational needs to maximize the effectiveness of RAI therapy. Multidisciplinary team should be collaborating in management of patients undergoing RAI therapy and helping them to overcome their problems and needs

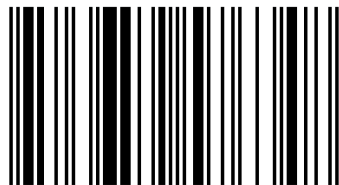
Thyroid Patients' Problems & RAI



Hanan Saber Abd El-Fattah

# Thyroid patients' problems & needs with radioactive iodine therapy

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## LIST OF ABBREVIATION

ACS	American Cancer Society.
ADL	Activities of Daily Living
DTC	Differentiated Thyroid Cancer.
ECG	Electrocardiograph.
Fig.	Figure.
FNA	Fine Needle Aspiration Biopsy.
GIT	Gastrointestinal Tract
HNC	Head & Neck Cancer.
KI	Potassium Iodide.
Mci/g	Milcuire / each gram of thyroid weight.
NCCN	National Comprehensive Cancer Network.
PTC	Papillary Thyroid Carcinoma.
PTH	Parathyroid Hormone.
PTU	Propylthiouracil.
RAI	Radioactive Iodine.
SCIP	Satisfaction with Cancer Information Profile.
SPARC	Sheffield Profile for Assessment Referral for Cancer.
SSKI	Saturated Solution Potassium Iodide
T <sub>3</sub>	.Triiodothyronine
T <sub>4</sub>	Tetraiodothyronine.
TC-99m	Technetium-99m.
TRH	Thyrotropin Releasing Hormone.
TSH	. Thyroid-Stimulating Hormone
US	Ultrasound.
WHO	World Health Organization.

## CHAPTER I

### **Introduction**

The thyroid gland is one of the endocrine glands situated at the front and sides of neck. It controls how quickly the body uses energy, makes proteins, and controls how sensitive the body is to other hormones. It participates in these processes by producing thyroid hormones, the principal ones being triiodothyronine ( $T_3$ ) and thyroxine which can sometimes be referred to as tetraiodothyronine ( $T_4$ ). These hormones regulate the rate of metabolism and affect the growth and rate of function of many other systems in the body.  $T_3$  and  $T_4$  are synthesized from both iodine and tyrosine. The thyroid also produces calcitonin, which plays a role in calcium homeostasis (Rothrock, Smith & McEwen, 2012).

Hormonal output from the thyroid is regulated by thyroid-stimulating hormone (TSH) produced by the anterior pituitary, which itself is regulated by thyrotropin-releasing hormone (TRH) produced by the hypothalamus. The most common problems of the thyroid gland consist of an overactive thyroid gland, referred to as hyperthyroidism, and an underactive thyroid gland, referred to as hypothyroidism. Oversecretion of thyroid hormones is usually associated with an enlarged thyroid gland (goiter). Goiter also commonly occurs with iodine deficiency. In this latter condition, lack of iodine results in low levels of circulating thyroid hormones, which causes increased release of TSH; the elevated TSH causes overproduction of thyroglobulin and hypertrophy of the thyroid gland (O'Brien & Dirksen, 2008).

The thyroid is a unique organ in that it has a natural avidity for iodine that is not manifested in any other tissue of the body. Indeed, in the light of present knowledge, one can say that there is no other organ of the body having such a highly selective affinity for any natural-occurring element as that of the thyroid for iodine. This characteristic of the thyroid has provided biologists and physicians with a useful

yardstick for studying the normal and the morbid physiology of this organ (Rolfes, Pinna & Whitney, 2009). Iodine is essential to the thyroid gland for synthesis of its hormones. In fact, the major use of iodine in the body is by the thyroid, and the major derangement in iodine deficiency is alteration of thyroid function. Iodine is ingested in the diet and absorbed into the blood in the gastrointestinal tract. The thyroid gland is extremely efficient in taking up iodide from the blood and concentrating it within the cells, where iodine ions are converted to iodine molecules, which react with tyrosine (an amino acid) to form the thyroid hormones also Iodine-131 has been used to image the thyroid several decades (Smeltzer & Bare, 2010).

In the United States, radioactive iodine is currently the treatment of choice for Graves' disease. Many clinical endocrinologists prefer an ablative dose of radioactive iodine, but some prefer use of a smaller dose in an attempt to render the patient euthyroid. Ablative therapy with radioactive iodine yields quicker resolution of the hyperthyroidism than do small-dose therapy and thereby minimizes potential hyperthyroid-related morbidity. Radioactive iodine treats hyperthyroidism by gradually shrinking your thyroid - ultimately destroying the gland. This therapy is much safer than it sounds; in fact, it is the most commonly used hyperthyroid treatment in the US. Unlike antithyroid medications, radioactive iodine is a permanent and more reliable cure for hyperthyroidism (Singer, Cooper & Levy, 2008).

The use and nature of radioactive iodine (RAI) are complex topics for patients with thyroid conditions to understand. Fear and anxiety over its use, misinformation about it, confusion regarding post scanning and post treatment procedures, patient literacy, post administration thyroid health status, and several other socioeconomic factors like follow up regimen and its costs, education level and culture of how the patient will be isolated for a period of time and also how to deal with others post treatment, can create serious barriers to accept RAI scanning and treatment (Rosenthal, 2008).

However, it requires strict compliance with instructions in order to insure its accuracy and efficacy. So physicians and nurses responsible for treating such patients should have an understanding of the clinical pathophysiology and natural history of the disease processes, should be familiar with alternative forms of therapy, and should be able to collaborate closely with each others to help patient to be aware of this line of management and how to maximize the effectiveness of it. In order to have the best test/treatment possible, there are preparatory measures you must take in order to maximize the uptake of the radioactive iodine by remaining normal thyroid tissue or metastatic thyroid cancer (Hamilton, Soleym & Eichorn, 2010).

### **Significance of the Study**

WHO Statistics (2010) revealed that there are 1,522,348 patients with thyroid diseases in Egypt; also the previous Egyptian researches indicate that the percentage of thyroid diseases becomes (1.4 %) and Statistics and Medical Records Department at Kasr El Aini Hospital revealed that the number of the inpatients for radioactive iodine therapy from 2006 until 2010 has been increased as from 77 patients at 2006 to 228 patients at 2010, so, the radioactive iodine becomes an important line of management for the thyroid diseases. This target of patients need special care, preparations and health teaching and all this must be based on a clear identification of their needs and problems, so this research will be conducted to assess knowledge, needs, and problems among patients undergoing RAI therapy.

Thyroid cancer is commonly diagnosed at a younger age than most other adult cancers; 80% of newly diagnosed thyroid cancer patients are under 65 years of age. The chance of being diagnosed with thyroid cancer has risen in recent years and still is, now Thyroid cancer is increasingly being diagnosed in North America and Europe. Papillary thyroid carcinoma (PTC) accounts for the majority of these newly diagnosed cases. Cancer of the thyroid is much less prevalent than other forms of

cancer; however, it accounts for 90% of endocrine malignancies. According to the American Cancer Society (ACS, 2008), about 20.700 new cases of thyroid cancer are diagnosed each year. Women account for 15.800 of the new cases and men 4.900. About 800 women and 500 men die annually from this malignancy, while (ACS, 2012) stated that about 56,460 new cases of thyroid cancer (43,210 in women, and 13,250 in men) and about 1,780 deaths from thyroid cancer (1,000 women & 780 men).

It has been observed over many years of experience in the clinical training, that the patients with thyroid diseases who planned for receiving or already received radioactive iodine complaining from lack of knowledge about its management; for example, its action, patients' preparations, side effects and/or complications, and follow up. All of them had fears about the unpredictability of the illness and the disruption of their lives. Younger patients worry about marriage, having children, and the burden that they bring to their families.

### **Aim of the Study**

This study aimed to assess the knowledge, needs and problems among patients undergoing radioactive iodine therapy.

### **Research questions:**

To achieve this aim the following research questions were formulated:

Q1: What are the knowledge, needs and problems of the patients undergoing radioactive iodine therapy?

Q2: Is there a relationship between RAI patients' problems and needs?

## CHAPTER II

### Review of Literature

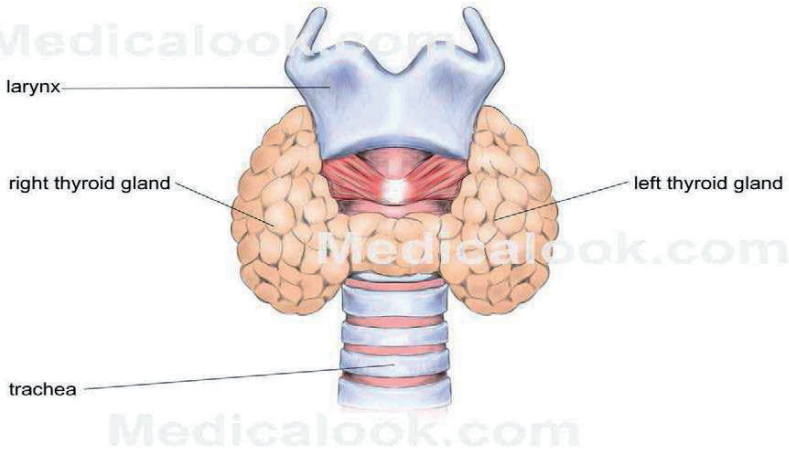
This review of literature will be presented in four sections. The 1<sup>st</sup> section will be concerned with the anatomy and physiology of the thyroid gland, the 2<sup>nd</sup> will be devoted to description of the thyroid disorders and their related sub-items (e.g., causes, clinical manifestation, management etc.). The 3<sup>rd</sup> section focused on the radioactive iodine therapy (RAI) and the patients' related knowledge, problems and needs. Finally the last section will be concerned with the nursing role during the RAI therapy.

#### **Overview of Anatomy and Physiology of the Thyroid Gland**

The thyroid gland is a butterfly-shaped organ and is composed of two cone-like lobes or wings, right lobe and left lobe, connected via the [isthmus](#). The organ is situated on the anterior side of the neck, lying against and around the [larynx](#) and [trachea](#), reaching posteriorly the esophagus and [carotid sheath](#). It starts cranially at the oblique line on the [thyroid cartilage](#) (just below the laryngeal prominence, or 'Adam's Apple'), and extends inferiorly to approximately the fifth or sixth tracheal ring. It is difficult to demarcate the gland's upper and lower border with vertebral levels because it moves position in relation to these during swallowing (Saladin, 2011).

The thyroid gland's firm attachment to the underlying trachea is the reason behind its movement with swallowing. In variable extent, Lalouette's Pyramid, a pyramidal extension of the thyroid lobe, is present at the most anterior side of the lobe. In this region, the [recurrent laryngeal nerve](#) and the inferior thyroid artery pass next to, or in the ligament and tubercle. Between the two layers of the capsule and on the posterior side of the lobes, there are on each side two [parathyroid glands](#). The thyroid isthmus is variable in presence and size, can change shape and size, and can encompass a cranially extending pyramidal lobe (lobus pyramidalis or processus

pyramidalis), remnant of the [thyroglossal duct](#). The thyroid is one of the largest endocrine glands, weighing 2-3 grams in neonates and 18-60 grams in adults, and is increased in pregnancy (Martini & Nath, 2011).



*Figure (1): the anatomical diagram of the thyroid gland (2012). Adopted from: [www.Medicallook.com](http://www.Medicallook.com)*

**Thyroid blood supply.** The thyroid is supplied with arterial blood from the [superior thyroid artery](#), a branch of the [external carotid artery](#), and the [inferior thyroid artery](#), a branch of the [thyrocervical trunk](#), and sometimes by the [thyroid artery](#), branching directly from the brachiocephalic trunk. The venous blood is drained via [superior thyroid veins](#), draining in the [internal jugular vein](#), and via inferior thyroid veins, draining via the plexus thyroideus impar in the left [brachiocephalic vein](#). Lymphatic drainage passes frequently the [lateral deep cervical lymph nodes](#) and the [pre- and paratracheal lymph nodes](#). The gland is supplied by parasympathetic nerve input from the [superior laryngeal nerve](#) and the [recurrent laryngeal nerve](#) (Scanlon & Sanders, 2009).

**Thyroid physiology and mechanism of action.** The primary function of the thyroid is production of the hormones [triiodothyronine](#) ( $T_3$ ), thyroxine ( $T_4$ ), and [calcitonin](#). Up to 80% of the  $T_4$  is converted to  $T_3$  by peripheral organs such as the

[liver](#), [kidney](#) and [spleen](#).  $T_3$  is several times more powerful than  $T_4$ , which is largely a [prohormone](#), perhaps four or even ten times more active. The thyroid's main role in the endocrine system is to regulate the metabolism, which is the body's ability to break down food and convert it to energy (Taylor & Francis, 2008). Food essentially fuels our bodies, and our bodies each "burn" fuel at different rates. This is why some people are having "fast" metabolism and others having "slow" metabolism. The thyroid keeps metabolism under control through the action of thyroid hormone, which it makes by extracting iodine from the blood and incorporating it into thyroid hormones (Considine, 2010).

Thyroid cells are unique in that they are highly specialized to absorb and use iodine. Every other cell depends on the thyroid to manage its metabolism. The pituitary gland and hypothalamus both control the thyroid. When thyroid hormone levels drop too low, the production of  $T_4$  and  $T_3$  is regulated by thyroid-stimulating hormone (TSH), released by the [anterior pituitary](#) in hypothalamus. The thyroid and thyrotropes form a [negative feedback loop](#): TSH production is suppressed when the levels are high. The TSH production itself is modulated by [thyrotropin-releasing hormone](#) (TRH), which is produced by the [hypothalamus](#) and secreted at an increased rate in situations such as cold exposure (to stimulate [thermogenesis](#)) (Guyton & Hall, 2009).

The TSH production is blunted by [somatostatin](#), rising levels of [glucocorticoids](#) and the hormones ([estrogen](#) & [testosterone](#)), and excessively high blood iodide concentration. An additional hormone produced by the thyroid contributes to the regulation of blood [calcium](#) levels. Parafollicular cells produce [calcitonin](#) in response to hypercalcemia. Calcitonin stimulates movement of calcium into [bone](#), in opposition to the effects of [parathyroid hormone](#) (PTH). However, calcitonin seems far less essential than PTH, as calcium metabolism remains clinically normal after removal of the thyroid ([thyroidectomy](#)), but not the parathyroids (Rooke & Sparks, 2008)

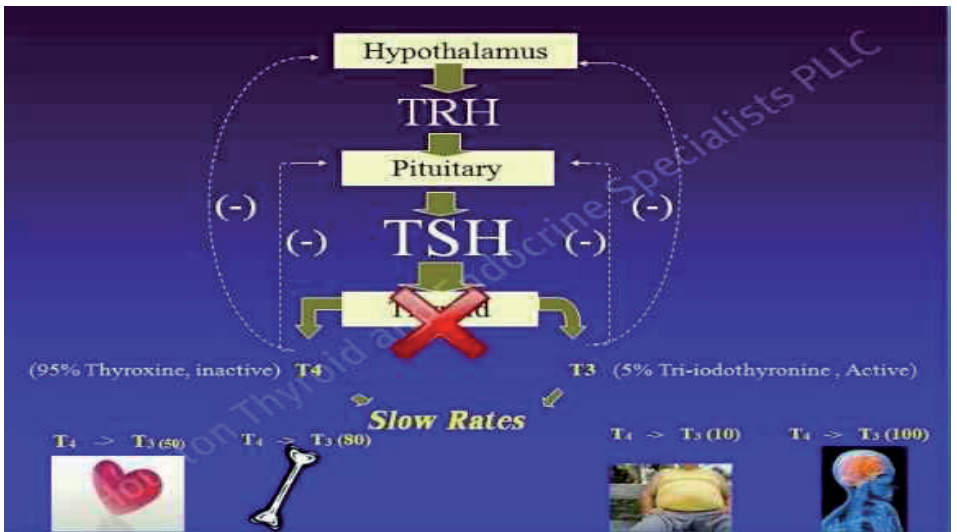
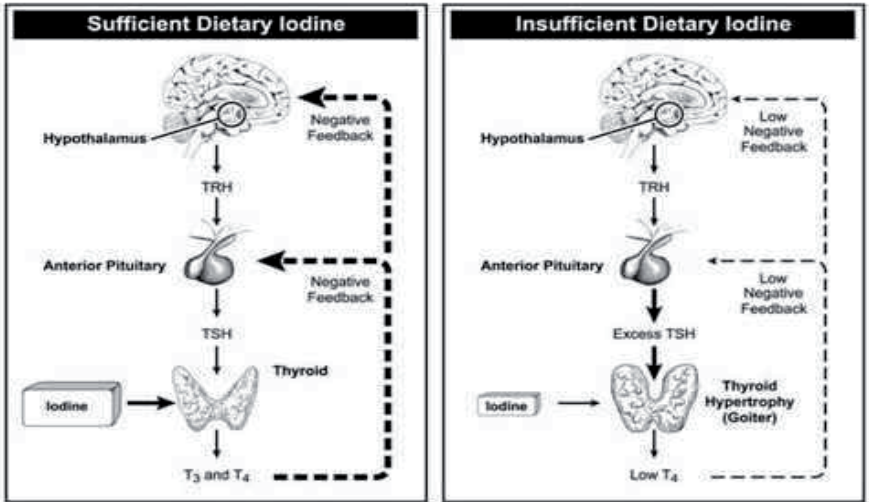


Figure (2): The thyroid system diagram (2011). Adopted from:  
[www.lpi.oregonstate.edu](http://www.lpi.oregonstate.edu)

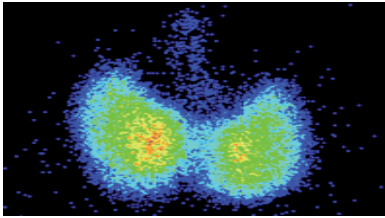
## Assessment and Diagnostic Findings

Assessment of the thyroid gland is done through inspection and palpation routinely on all patients. Inspection begins with identification of landmarks. The lower neck region between the sternocleidomastoid muscles is inspected for swelling or asymmetry. The patient is instructed to extend the neck slightly and swallow. Thyroid tissue rises normally with swallowing. The thyroid is then palpated for size, shape, consistency, symmetry, and the presence of tenderness (Jayakumar, 2011).

**Laboratory and diagnostic investigations.** They are used to assess the thyroid gland functions, are thyroid hormones measuring, thyroid scanning, biopsy, and ultrasonography. The most widely used tests are serum immunoassay for TSH and free thyroxine (FT4) (Schnell, Leeuwen & Kranpitz, 2010). **Fine-needle aspiration biopsy (FNA)** is done through using a small-gauge needle to sample the thyroid tissue for biopsy; it considered a safe and accurate method of detecting malignancy. It is often the initial test for evaluation of thyroid masses. (Fitzgerald, 2008).

**The Thyroid Scan** is a nuclear medicine study performed to assess thyroid size, shape, position, and function; it is useful for evaluating thyroid nodules, multinodular goiter, and thyroiditis; assisting in the differential diagnosis of masses in the neck, base of the tongue, and mediastinum; and ruling out possible ectopic thyroid tissue in these areas (Fischbach, 2011). Thyroid scanning is performed after oral administration of radioactive iodine-123 (I-123) or I-131, or intravenous (IV) injection of technetium- 99m (Tc-99m). Increased or decreased uptake by the thyroid gland and surrounding area and tissue is noted: areas of increased radionuclide uptake (“hot spots”) are caused by hyperfunctioning thyroid nodules, which are usually nonmalignant; areas of decreased uptake (“cold spots”) are caused by hypofunctioning nodules, which are more likely to be malignant. Ultrasound imaging may be used to determine if the cold spot is a solid, semicystic lesion or a pure cyst (cysts are rarely cancerous). To determine whether the cold spot depicts a malignant

neoplasm, however, a biopsy must be performed (Larson, Anderson & Koslawy, 2009).



*Figure (3) The thyroid scan image (2012). Adopted from:www.thyroid.com*

*The thyroid scan* is contraindicated for patients who are pregnant or suspected of being pregnant, unless the potential benefits of the procedure far outweigh the risks to the fetus or mother. Factors that may impair clear imaging may be inability of the patient to cooperate or remain still during the procedure because of age, significant pain, or mental status, improper adjustment of the radiographic equipment to accommodate obese or thin patients, which can cause overexposure or underexposure and a poor-quality study, incorrect positioning of the patient, which may produce poor visualization of the area to be examined (Kee, 2011).

*Factors affecting iodine uptake* are: Ingestion of foods containing iodine (iodized salt) or medications containing iodine (cough syrup, potassium iodide, vitamins, Lugol's solution, thyroid replacement medications), antithyroid medications (propylthiouracil), corticosteroids, antihistamines, warfarin, sulfonamides, nitrates, corticosteroids, thyroid hormones which can decrease the uptake of the radionuclide; Increased uptake of iodine in persons with an iodine-deficient diet or who are on phenothiazine therapy, Gastroenteritis symptoms as vomiting and severe diarrhea, which could affect absorption of orally administered radionuclide. Metallic objects within the examination field (e.g., jewelry or body rings), which may inhibit organ visualization and can produce unclear images (Archer, Chastung, Craig & Heyne, 2010)

## The Thyroid Disorders

Thyroid disorders could be developed at any age and resulted from a variety of causes such as injury, disease, or dietary deficiency. But in most cases, they can be traced to the following problems: hyperthyroidism, hypothyroidism and abnormal thyroid growth can affect the thyroid gland. All these disorders may give rise to goiter, that is, an enlarged thyroid. The disorders are classified into goiter which is a bulge in the neck. A toxic goiter is associated with hyperthyroidism, and a non-toxic goiter, also known as a simple or endemic goiter, is caused by iodine deficiency, hyperthyroidism caused by too much thyroid hormone (Bartelmo & lockart, 2009).

Hyperthyroidism, or overactive thyroid, is the overproduction of the thyroid hormones  $T_3$  and  $T_4$ , and is most commonly caused by the development of Graves' disease; an autoimmune disease in which antibodies are produced which stimulate the thyroid to secrete excessive quantities of thyroid hormones. The disease can result in the formation of a toxic goiter as a result of thyroid growth in response to a lack of negative feedback mechanisms (Milas & Rehan, 2009). People with hyperthyroidism, are often sensitive to heat, hyperactive, and eat excessively. Goiter is sometimes a side effect of hyperthyroidism. This is due to an over-stimulated thyroid and inflamed tissues, respectively. It presents with symptoms such as a thyroid goiter, protruding eyes (exophthalmoses), palpitations, excess sweating, diarrhea, weight loss, muscle weakness and unusual sensitivity to heat. The appetite is often increased (Goldman & Ausiello, 2009)

**Grave's disease**, which is excessive thyroid hormones being produced in the body. The cause for this is that the immune system of the body stimulates the thyroid gland to produce two more different kinds of hormones. Grave's disease is also known as diffuse toxic goiter, and it primarily affects middle aged women, though men are also prone to it (Gilbert, Woloshin & Schwartz, 2011). This is one of the most widely seen enlarged thyroid gland causes and it may result from nutritional deficiency. This is a condition that is easily recognizable amongst many people. A

deficiency of iron in the diet is known to be one of the most widespread enlarged thyroid causes around the world. It is said that nearly one billion people worldwide suffer from goiter due to a lack of iron in their diet. This is more commonly seen in under developed countries and third world countries (Thadani, 2011).

Similar to Grave's disease, **Hashimoto's disease** is also caused by the immune system of the body attacking the thyroid gland. In this case though, the immune system diminishes the amount of thyroid hormones that are being generated, and these results in hypothyroidism. Hashimoto's disease is also widely known as Hashimoto's thyroiditis or chronic lymphocytic thyroiditis. This is also one of the very commonly seen causes of an enlarged thyroid gland. This is a hereditary disease and is known to run in some families (Sherman, 2009).

**Hypothyroidism** is a common condition characterized by too little thyroid hormone. In infants, the condition is known as cretinism which has very serious side effects, including abnormal bone formation and mental retardation. The hypothyroidism in adult, patient may experience sensitivity to cold, little appetite, and an overall sluggishness. Hypothyroidism often goes unnoticed, sometimes for years, before being diagnosed (Thadani, 2011).

**Thyroid Cancer**, Small tumors or Thyroid nodules are very common occurrences though, and most people get them frequently. About 95% of thyroid nodules are noncancerous. The ones that are cancerous though, are extremely harmful and can also spread to various other parts of the body and cause some serious bodily damage (Ladenson & Kim, 2009).

**Papillary carcinoma of the thyroid** is the most common cancer of the thyroid gland. This type of cancer is more common in women than in men. It may occur in childhood, but is most often seen in adults between age 30 and 50 (American National Institutes of Health ANIH, 2012). The cause of this cancer is unknown; a

genetic defect may be involved. Radiation increases the risk of developing thyroid cancer, exposure may occur from: high-dose external radiation treatments to the neck, especially during childhood, used to treat childhood cancer or some non-cancerous childhood conditions or radiation exposure from nuclear plant disasters. Radiation given through a vein (through an IV) during medical tests and treatments does not increase the risk of developing thyroid cancer. (Topiwala, 2012)

### **The clinical manifestation of enlarged thyroid**

*Swelling* is considered the common symptom; swelling on the neck could be due to the enlarged thyroid. It would be very prominent in case of the enlargement is severe. Due to the swelling of the thyroid gland, the esophagus and the wind pipe get compressed which leads to coughing and the sensation of unable to breathe properly. Pain in the joints and muscle pain are also the enlarged thyroid symptoms. The person feels fatigued and tired due to the muscle weakness and pain. The frequency of muscle cramps in hands and legs increases and there is a high possibility of the person facing tendonitis problems too. Joint pain is one of the common thyroid disease symptoms. (National Comprehensive Cancer Network. NCCN Guidelines in Oncology, 2010).

As enlarged thyroid presses the windpipe and narrows it, there is a whistling noise created when the person exhales. This is called wheezing and is one of the several enlarged thyroid symptoms. Sometimes, the person may make very loud breathing sounds too. This could also be one of the slightly enlarged thyroid symptoms. Enlargement of the thyroid gland results in the compression of the esophagus and the wind pipe, this enlargement causes swallowing problems for the person (Christopher, 2009).

A person with an enlarged thyroid gland can feel dizzy whenever arms are raised above the head. This is also caused due to the obstruction of the blood flow in

the veins. Sudden head jerks will also cause dizziness and could be accompanied by a feeling of confusion (Albin, & Davis, 2009). Other enlarged thyroid symptoms include shortness of breath, gagging, hoarseness and neck lumps; in some cases bowel obstruction is also the symptom of thyroid problem. These symptoms may not sound serious, and may be the symptoms of other minor health issues too, so are usually ignored. If the person cannot nail these symptoms with any other health issues, necessary tests should be done. If the tests show an enlarged thyroid gland, then the treatments need to start on time to avoid thyroid cancer and other further complications (Deeptee, 2010).

There are **other disorders** like solitary nodules, or lumps in the thyroid; the great majority of nodules are benign. Thyroid cancer is fairly common; it can affect anyone at any age, though women and people over thirty are most likely to develop the condition. Thyroiditis is an inflammation of the thyroid that may be associated with abnormal thyroid function (particularly hyperthyroidism). Inflammation can cause the thyroid's cells to die, making the thyroid unable to produce enough hormones to maintain the body's normal metabolism. There are five types of thyroiditis, and the treatment is specific to each (Hershman, 2010).

### **The Management of Thyroid Disorders**

**Treatment of hyperthyroidism or any similar disorder** is directed toward reducing thyroid hyperactivity to relieve symptoms and compact the complications. Treatment depends on the cause of the hyperthyroidism and may require a combination of therapeutic approaches. Two forms of pharmacotherapy are available for treating hyperthyroidism and controlling excessive thyroid activity: (1) use of irradiation by administration of the radioisotope I-123 or I-131 for destructive effects on the thyroid gland and (2) antithyroid medications that interfere with the synthesis of thyroid hormones and other agents that control manifestations of hyperthyroidism. (Camphausen & Hoskins, 2008). Radioactive iodine is often used to treat hyperthyroidism and one of the options used to treat cancer of the thyroid. The two

forms of radioactive iodine that are commonly used are I-131 and I-123. Both the forms release gamma rays that can penetrate long distances and can be easily detected from outside the body (Edward, Abass & Balon, 2011).

The objective of **pharmacotherapy**, which known as antithyroid medications is to inhibit one or more stages in thyroid hormone synthesis or hormone release; another goal may be to reduce the amount of thyroid tissue, with resulting decreased thyroid hormone production. Antithyroid agents block the utilization of iodine by interfering with the iodination of thyrosine and the coupling of iodothyrosines in the synthesis of thyroid hormones. This prevents the synthesis of thyroid hormone (Norman, 2013). The most commonly used medications are propylthiouracil (Propacil, PTU) or methimazole (Tapazole) until the patient is euthyroid (ie, neither hyperthyroid nor hypothyroid). These medications block extrathyroidal conversion of T4 to T3. Because antithyroid medications do not interfere with release or activity of previously formed thyroid hormones, it may take several weeks for relief of symptoms. A maintenance dose is established, followed by a gradual withdrawal of the medication over the next several months (Bahn & Schwartz, 2012).

*pharmacotherapy* is determined on the basis of clinical criteria, including changes in pulse rate, pulse pressure, body weight, size of the goiter, and results of laboratory studies of thyroid function. Toxic complications of antithyroid medications are relatively uncommon; nevertheless, the importance of periodic follow-up is emphasized because medication sensitization, fever, rash, urticaria, or even agranulocytosis and thrombocytopenia (decrease in granulocytes and platelets) may develop. With any sign of infection, especially pharyngitis and fever or the occurrence of mouth ulcers, the patient is advised to stop the medication, notify the physician immediately, and undergo hematologic studies. Rash, arthralgias, and fever occur in 5% of patients. Agranulocytosis, the most serious toxic side effect, occurs in 1 of every 200 patients, its incidence is higher in patients older than 40 years and

generally occurs within the first 3 months of therapy but may occur up to 1 year after it is started (Lansford, 2010).

**Iodine or iodide compounds** are no longer used as the sole method of hyperthyroidism treatment. Such compounds decrease the release of thyroid hormones from the thyroid gland and reduce the vascularity and size of the thyroid. Compounds such as potassium iodide (KI), Lugol's solution, and saturated solution of potassium iodide (SSKI) may be used in combination with antithyroid agents or beta-adrenergic blockers to prepare the patient with hyperthyroidism for surgery. These agents reduce the activity of the thyroid hormone and the vascularity of the thyroid gland, making the surgical procedure safer (Teknos, 2011). Solutions of iodine and iodide compounds are more palatable in milk or fruit juice and are administered through a straw to prevent staining of the teeth. Beta-adrenergic blocking agents are important in controlling the sympathetic nervous system effects of hyperthyroidism. For example, propranolol (Inderal) is used to control nervousness, tachycardia, tremor, anxiety, and heat intolerance. The patient continues taking propranolol until the FT4 is within the normal range and the TSH level approaches normal. Use of beta-adrenergic blocking agents (eg, propranolol [Inderal]) may be indicated to decrease the cardiovascular and neurologic signs and symptoms of thyrotoxicosis. These agents must be used with extreme caution in elderly patients to minimize adverse effects on cardiac function that may produce heart failure (Frantz, Ball, Keston and Palmer, 2010)

**Surgery** to remove thyroid tissue was the primary method of treating hyperthyroidism; today, surgery is reserved for special circumstances—for example, in pregnant women allergic to antithyroid medications, patients with large goiters, or patients unable to take antithyroid agents. Surgery for treatment of hyperthyroidism is performed soon after the thyroid function has returned to normal which may last from 4 to 6 weeks (American Thyroid Association (ATA), 2012).

**Surgical removal** also considered the treatment of choice for thyroid carcinoma. Total or near-total thyroidectomy is the most common procedure performed when possible as illustrated in figure (4). Modified neck dissection or more extensive radical neck dissection is performed if there is lymph node involvement. Some or all lymph nodes close to the thyroid gland are removed to reduce the risk of the cancer coming back after surgery. If the cancer is at an early stage and not spread then surgery alone may be curative, this should provide a long term cure (Kuy, Roman, Desai & Sosa, 2009).



Figure (4): Illustrated diagram of the sub-total thyroid surgery (2011). Adopted from: [www.Mayoclinic.com](http://www.Mayoclinic.com)

**Risks and side effects of surgery,** Patients who have thyroid surgery are often ready to leave the hospital within a few days after the operation. Potential complications of thyroid surgery include may be happened such as; *Temporary or permanent hoarseness or loss of voice*, it could be happen if the larynx (voice box) or windpipe is irritated by the breathing tube that was used during surgery and if the nerves to the larynx (or vocal cords) are damaged during surgery. Surgeon should examine the vocal cords before surgery to assess their mobility (Franklyn & Sheppard, 2010).

Damage to the parathyroid glands, which regulate blood calcium levels, can lead to *low blood calcium levels (hypocalcaemia)* resulting in muscle spasms, numbness and tingling sensations. *Excessive bleeding* or formation of a major blood clot in the neck (hematoma) and *wound infection* may occur after operation. All patients who have had near-total or total thyroidectomy will need thyroid hormone replacement (Kuy et al., 2009).

**Radioactive iodine (RAI) treatment.** Many people are given radioactive iodine treatment after their thyroid surgery. Radioactive iodine treatment uses radioactive iodine (I-131) to destroy thyroid cancer cells anywhere in the body. This treatment is usually given as liquid or capsules. The thyroid cancer cells absorb the iodine and receive a very high dose of radiation, which will help to destroy them. As other cells in the body do not absorb iodine, they are not affected by the radioactive iodine. Most radiation is gone from the body in a few days. If the patient has medullary thyroid cancer or anaplastic thyroid cancer then it is unlikely will receive radioactive iodine treatment, as these types of thyroid cancer rarely respond to it (Pazdur & Wagman, 2009). RAI therapy will be discussed in more details later.

**Radiotherapy,** is a treatment which uses high-energy beams of radiation which are focused on cancerous tissue. This kills cancer cells, or stops cancer cells from multiplying. Radiotherapy may be advised if patient has thyroid cancer that does not respond to radioactive iodine treatment. Chemotherapy is a treatment of cancer by using anti-cancer medicines which kill cancer cells, or stop them from multiplying. **Chemotherapy** is rarely used to treat cancer of the thyroid but may be used if the cancer returns or has spread to other parts of the body (Sellin, Lustig & Lamont, 2011).

### **Radioactive Iodine Therapy (RAI)**

**Historical overview of radioactive iodine therapy,** Saul Hertz (April 20, 1905 – July 28, 1950) was an [American physician](#) who discovered the use of [radioactive iodine](#) for the treatment of [thyroid disease](#). Hertz served as Chief of the Thyroid Clinic from 1931-1943. In 1937, in collaboration with the physicist [Arthur Roberts](#) of [Massachusetts Institute of Technology](#), he began studies in rabbits to evaluate the effects of I-128 produced in very small quantities by neutron bombardment on the thyroid. The studies showed that the [hyperplastic thyroid gland](#) absorbed more of the radioactive substance than the normal gland. This proved the

tracer qualities of the radioactive substance which was critical for determining the amount of iodine the human thyroid took up so that a calculation of the dosage of radioactive iodine could be calibrated for treatment. (Barbara, Schuleller & Kristin, 2010).

In January 1941, Hertz administered [cyclotron](#) produced a I-130 - I-131 mixture as a therapeutic dose to the first human patient with Graves' hyperthyroidism, or [Graves' disease](#). This was the first successful treatment of humans with an artificially produced radioactive material. A five year follow up study of the 29 patients documented the successful treatment and safety of [radioactive iodine](#) for the treatment of [hyperthyroidism](#) at May 1946. The follow-up study firmly launched the use of radioactive iodine therapy as a standard treatment for [Graves' disease](#) (American Thyroid Association ATA, 2009).

**Regarding the nature of RAI**, Iodine-131 ( $^{131}\text{I}$ ), also called radioiodine (though many other radioactive isotopes of this element are known), is an important [radioisotope](#) of [iodine](#). It has a radioactive decay half life of about eight days. Most I-131 production is from nuclear reactor neutron-irradiation of a natural tellurium target. Irradiation of natural tellurium produces almost entirely I-131 as the only radionuclide with a half-life longer than hours. Iodine-131 can be "seen" by [nuclear medicine](#) imaging techniques (i.e., [gamma cameras](#)) whenever it is given for therapeutic use, since about 10% of its energy and radiation dose is via gamma radiation. However, since the other 90% of radiation (beta radiation) causes tissue damage without contributing to any ability to see or "image" the isotope, other less-damaging radioisotopes of iodine are preferred in situations when only nuclear imaging is required (Chattopadhyay, Sankha & Sujata, 2010).

**Radioactive iodine uses**, are mostly medical and pharmaceutical, for hyperthyroidism and thyroid cancer is a type of internal radiation treatment, which involves administration of small doses of radioactive iodine by mouth, in the form of

liquid or capsules. The radioactive iodine is specific in its action and does not affect the rest of the body. It passes out of the body after a few weeks. The higher the dose, the more the number of thyroid cells that cease their functions. Radioactive iodine therapy has been used to treat patients with papillary or follicular thyroid cancers. It can even be used to treat thyroid cancer that has spread to the neck or other parts of the body (Bander & Martin, 2012).

**The goal of radioactive iodine therapy (I-123 or I-131)**, is to destroy the overactive thyroid cells. Almost all the iodine that enters and is retained in the body becomes concentrated in the thyroid gland, where it destroys thyroid cells without jeopardizing other radiosensitive tissues. Over a period of several weeks, thyroid cells exposed to the radioactive iodine are destroyed, resulting in reduction of the hyperthyroid state and inevitably hypothyroidism. The patient is instructed about what to expect with this tasteless, colorless radioiodine, which are administered (Peters, Fischer, Bogner, Reiners, & Schleusener, 2010).

A single oral dose of the agent is administered, ranged from 80 to 160 (mCi/g of estimated thyroid weight). About 70% to 85% of patients are cured by one dose of radioactive iodine, and 10% to 20% require two doses; rarely is a third dose necessary. Use of an ablative dose of radioactive iodine initially causes an acute release of thyroid hormone from the thyroid gland and may cause an increase of symptoms (Kaptein, Levenson, Siegel, Gadallah & Akmal, 2009). The patient is observed for signs of thyroid storm; propranolol is useful in controlling these symptoms. After treatment with radioactive iodine, the patient is followed closely until the euthyroid state is reached. In 3 to 4 weeks, symptoms of hyperthyroidism subside. Because the incidence of hypothyroidism after this form of treatment is very high, close follow-up is required to evaluate thyroid function. Thyroid hormone replacement is necessary; small doses are usually prescribed, with the dose gradually increased over a period of months (up to about 1 year) until the FT4 and TSH levels stabilize within normal ranges (Ross, Cooper & Mulder, 2012).

Radioactive iodine has been used to treat toxic adenomas and multinodular goiter and most varieties of thyrotoxicosis (rarely permanently successful); it is preferred for treating patients beyond the childbearing years with diffuse toxic goiter. It is contraindicated in pregnancy and in nursing mothers because radioiodine crosses the placenta and is secreted in breast milk. A major advantage of treatment with radioactive iodine is that it avoids many of the side effects associated with antithyroid medications. However, many patients and their families fear medications that are radioactive. Because of this fear, many patients elect to take antithyroid medications rather than radioactive iodine (Peters et al., 2010).

The use of radioactive iodine is generally recommended for treatment of thyrotoxicosis in elderly patients unless an enlarged thyroid gland is pressing on the airway. The hypermetabolic state of thyrotoxicosis must be controlled by antithyroid medications before radioactive iodine is administered because radiation may precipitate thyroid storm by increasing the release of hormone from the thyroid gland. Thyroid storm, if it occurs, has a mortality rate of 10% in elderly patients (Nicks & Jackson, 2010).

Radioactive iodine therapy which used for hyperthyroidism treatment is almost done on an outpatient basis because the dose required is relatively small. The radioiodine I-131 is swallowed in a single dose, in capsule or liquid form, and is quickly absorbed into the bloodstream in the gastrointestinal tract (GIT) and concentrated from the blood by the thyroid gland, where it begins destroying the gland's cells. Although the radioactivity from this treatment remains in the thyroid for some time, it is greatly diminished within a few days. The effect of this treatment on the thyroid gland usually takes between one and three months to develop, with maximum benefit occurring three to six months after treatment. Usually, a single dose is successful in treating hyperthyroidism. However, rarely, a second treatment is needed (Andrade, Gross & Maia, 2012).

**The most common side effect of radioactive iodine** may seem ironic, yet it makes perfect sense of [hypothyroidism](#). The radioactive iodine often kills an excessive amount of thyroid cells, leaving the thyroid unable to produce enough hormones. It might seem odd to replace one disorder with another, but hypothyroidism is much easier to treat on a long-term basis than hyperthyroidism. If the patients develop hypothyroidism, they will need to take life-long [thyroid hormone replacement therapy](#) , but it is a safe, reliable, and cost-effective treatment (Santos, Romaldini & Ward, 2009).

*Other side effects of radioactive iodine* include: **metallic taste in the mouth which** can last for a few weeks, **nausea which** usually subsides one to two days after treatment, also **swollen salivary glands** which can last for a few weeks. It is caused by iodine absorbed by the salivary glands, though stimulating saliva flow a day after treatment (by sucking a lemon drop, for instance) is an effective remedy. Dry mouth, upset stomach, neck tenderness, sore throat and vomiting are temporary and fade away in a few weeks time. However, large doses of radioactive iodine may cause loss of fertility in men. Research shows that a very small number of people developed leukemia, after treatment with large doses of radioactive iodine (Compton & Karl, 2011).

### **Radioactive Iodine Ablation**

**The treatment of the thyroid patient with the radioactive iodine is a process of related steps which called also RAI ablation, as the patient planned to receive RAI, he has to pass through three phases: pre – treatment preparations, hospitalization & RAI ablation and post – treatment phase** (Delit, Silver, Yohalem & Segal, 2011).

**Regarding the first phase, the pre – treatment preparations include, firstly:** patients need to stop thyroid hormone for at least four and preferably six weeks prior to treatment with radioactive iodine. Patients who have been on very

high dose of thyroxine for long periods of time may need to stop the thyroxine more than 6 weeks prior to their treatment in order for the TSH to increase sufficiently (Luster, Clarke, Dietlein, Lassmann & Lind, 2009). For women and to a lesser extent men of child bearing age, give some thought, if appropriate, to birth control, as pregnancy should be avoided for the first 6-12 months after radioactive iodine due to the increased risk of miscarriage in women who have been treated with radioactive iodine for thyroid cancer. There is no evidence for an increased risk of miscarriage in the female partners of men who have received radioactive iodine, however in some small studies; a transient decrease in sperm count has been noted in the first year after radioactive iodine (Hertz and Roberts, 2010).

*Secondly*, the use of a low iodine diet for one week prior to administration of radioactive iodine to enhance maximal iodine uptake during the radioactive iodine treatment. The rationale underlying implementation of a low iodine diet is that more of the exogenous radioactive iodine will be taken up by any remaining thyroid cells if our own bodies are relatively depleted of iodine. These diets may be somewhat difficult to follow due to the abundance of iodine in many foods, and may be particularly challenging for patients, who for a variety of other medical reasons, already follow a specific diet (Lee & Mandel, 2009). Summary of 4 days low-iodine diet will be presented in table (1).

**Regarding phase 2, the Hospitalization & RAI ablation** female patients of reproductive age should have a pregnancy test done at the time of admission to make sure they are not pregnant. Radioactive iodine is usually administered in capsule form. Most patients have no major side effects after taking the radioactive iodine capsule. Some tenderness in the neck is common as the radioactive iodine often is taken up by remnants of normal thyroid cells and the salivary glands under the jaw. Chewing gum, or sucking on hard candies intermittently throughout the admission, starting 24 hrs after the administration of radioactive iodine, will help discharge the

radioactive iodine from the salivary glands and lessen this inflammation (Walter, Briel, Bonnema, Connell & Cooper, 2010).

It is not uncommon for patients to notice some dryness of the mouth or decrease in taste sensations for a few weeks after the radioactive iodine, due to its effect on the salivary glands. Patients may not have visitors during the initial period of their hospitalization. Close body contact, or hugging/kissing, or having subsequent visitors eat or drink in the room is strongly discouraged. The radiation levels will be checked to ensure that patients levels are sufficiently low prior to discharge (Hertz & Roberts, 2010).

Table (1): Summary of the 4-day low-iodine diet as used in the Leiden University Medical Center

	Not allowed	Allowed
Fish and sea products	All fish and sea products*	
Bread	Commercial bread	Bread baked with iodide-free salt Crackers, biscuits
Salt	Iodide-enriched salt, seasalt	Iodide-free salt
Water	Tapwater	Mineral water
Coffee, tea		If made with mineral water
Eggs	All eggs and products containing eggs	
Dairy products	Salted butters and margarines	Unsalted butter and margarines
	Foreign cheese	Dutch cheese (max. 20 g daily) Milk (max. 1 glass daily)
Meat	Game and poultry	Pork, beef, veal, horse
	All liver products	(max. 100 g daily)
Fruits	Specified fruits and fruit-juices	Specified fruits and fruit-juices (max. 2 portions daily)
Vegetables	Specified fresh vegetables	Specified fresh vegetables
	Canned or frozen vegetables	
Soups and sauces	Commercial soups and sauces	Home-made soups and sauces
Medication, shampoo	soap, Specified products	iodide-containing

\*Not allowed from 1 week before radioiodine administration.

In relation to **phase 3 (Post-Radioactive Iodine Treatment)**, it is important to drink reasonable amounts of fluids, and to make sure that the bowel habit is regular at the time of, and several days after the radioactive iodine treatment. The radioactive iodine that is not taken up by thyroid cells must be excreted in the urine and stool before patients can be safely discharged. Accordingly, make sure that the patients' bowels are moving regularly to enhance elimination of the radioactive iodine (Walter et al., 2010).

Patient may restart taking thyroid hormone, after receiving instructions from physician, often the day after being discharged from hospital. Follow up approximately four to eight weeks after patient's discharge from the hospital, for the blood levels of thyroid hormones, TSH, and thyroglobulin make sure that patients are on an appropriate dose of L-thyroxine to maintain TSH in the suppressed range (Soley & Miller, 2010). In some centers, a total body scan is done, from several days to 2 weeks following administration of the radioactive iodine. In over 98% of cases, nothing alarming is seen on this scan, and some studies have even questioned the utility of a post-radioactive iodine total body scan for patients with thyroid cancer confined to the thyroid. The vast majority of patients will have some uptake of iodine in the neck region due to a few remaining thyroid cells, and a dark spot in the region of the bladder may also be visualized on the scan (Lee & Griffing, 2013).

It is recommended that patients not become pregnant for the first 6-12 months following the radioactive iodine treatment. Although there is no evidence of an increased risk of birth defects in women who do become pregnant in this time period, there is a slightly higher rate of miscarriage in the year following radioactive iodine treatment for thyroid cancer. Hence, birth control is recommended for women in the reproductive age group. As small amounts of radioactive iodine may remain in your body for several weeks after the radioactive iodine treatment, breast feeding should also be discontinued in nursing mothers (Weingold, 2009).

People with cancer faced the risk of substantial and permanent physical impairment, disability, and inability to perform routine activities of daily living, as well as the psychological and social problems that can result from the diagnosis and its sequences. Patients with cancer and their families must cope with the stresses induced by physically demanding (and also often life-threatening) treatments for the illness and the permanent health impairment and disability, fatigue, and pain that can result, even when there are no longer any signs of the disease (Jayakumar, 2011).

These effects contribute to emotional distress and mental health problems among cancer patients, and together can lead to substantial social problems, such as the inability to work and reduced income. These effects are magnified in the presence of any psychological and social stressors that predate the onset of cancer, such as low income, lack of health insurance, and weak or absent social supports. Indeed, physical, psychological, and social stressors are often intertwined, both resulting from and contributing to each other (Zhiyong, 2011).

### **Nursing Management of Thyroid Patients undergoing RAI Therapy**

Nurses are in a key position to carry out patient care and education since they are the health care providers who have continuous contact with patient and family and are usually the most accessible source of information for patients. Their role is impeded on helping patients to prioritize the voluminous amount of information given to them so that they can make informed decisions. Explaining all treatment modalities, diagnostic studies and goal of treatment help patients to express their fears and questions (Knobf, 2009). Because patients have short length of inpatient stay, the focus of nuclear nursing care is to enhance physical comfort, preparing patients for hospital isolation after receiving RAI dose and providing them with post-discharge instructions. Adequate information must be provided for patients to make a successful transition from hospital to home management (Monahan, Sands, Nriehors, Marek & Green-Nigro, 2010).

The nursing process has been used for over 25 years as a systematic approach to nursing practice. The process is an efficient and effective method for organizing nursing knowledge and clinical decision making in providing planned client care. Although it has been undergoing constant re-evaluation and revision, the concepts within the process still remain central to nursing practice (Doenges & Moorhouse, 2003). So the nursing care will be illustrated on the nursing process model.

**Nursing assessment.** Comprehensive nursing assessment should be completed in order to promote patient, staff and public safety. The physicians assess the patient as to their suitability to meet the precautions necessary. Best nursing practice is achieved by the establishment of training courses for nurses and development assessment criteria (Volpe, 2012). All nursing staff involved in managing patients receiving radioiodine must be trained and proficient in the following aspects of management: the principles of radiation ablation therapy, radiation isotope as a treatment modality and its action, taking a comprehensive nursing assessment, including baseline observations. Provide Patient and family education on the procedure, going through patient information leaflet, assisting patient and families to express concerns and to clarify uncertainties prior to treatment (White, Duncan & Wendy, 2013).

**Risk factors,** to be assessed and considered before therapy initiation are; *Cognition*, careful assessment needs to be given to identify cognitive or intellectual impairment. The patient's ability to comprehend and observe the precautions outlined for distance isolation and for dealing with body fluids is crucial (Williams, Ankrett & Lazarus, 2010). *Patient understanding*, assessing the patients understanding and learning of the processes involved prior to the therapy is essential. The physicist will be able to enhance the patient's understanding of radiation safety. If the patient requires translation services, these need to be made available for this learning process. It is crucial that the patient's understanding of the process prior to the administration of 131-Iodine is secured.

*Ability to self-care*, patients for 131-I therapy should be independent in ADL's. Any patient who requires nursing care should be assessed as to the degree of nursing input necessary. Patients who require more than 15 minutes of close nursing attention per duty may not be suitable for 131-I. *Continence*, patients who exhibit the potential for incontinence of urine present an unacceptable risk to nursing staff, and should not receive 131-I unless in the nurses' opinion, continence can be assured by regular toileting. *Potential for vomiting*, any patient who has a significant risk of vomiting within the first 12 hours despite antiemetic must have the therapy delayed until their condition stabilizes and the risk of vomiting is reduced. Adopted from: British Code of Practice for the protection of nurses (2011).

**Nursing management.** Nuclear nurses should had plan of care for thyroid patients undergoing RAI therapy which started from the decision of giving it until patients discharge from hospital to ensure safe and effective management. It will be in the following sequences: **Room preparation**, this must be completed before the administration of the iodine and preferably before the patient arrives. Nair, (2011) advice the ward staff regarding the following: The room should be clean, and any equipment (telephone, television) is functional. Remove any fabric chairs and ensure that the call bell is working, emergency equipment in room should be available and working also placing radiation symbol signage outside of room. Rubbish bins are placed and signed for radiation safety that they are not removed prior to clearance. Visitor restriction sign placed on outside door of room. Ensure that patient's room has water jug, vomit cartons and tissues. And finally, hospital clothing, linens and towels are provided. (Baylis et al, 2011).

**Pre - admission preparation**, written consent for the procedure must be obtained by the prescribing consultant, isolation procedures and visitor restrictions must be outlined and a commitment from the patient to abide by these, to be obtained either verbally or incorporated in signed consent form. Check that patient knows when to stop thyroxine, or similar medications containing iodine as advised by

medical staff. Fish and shellfish contain iodine. These items must not be consumed within two hours of treatment. Advise the patient that in the event of contamination any items they bring into hospital may need to go into storage for an indeterminate time, also to bring in reading material to occupy themselves during the isolation period (Volpe, 2012).

Patients should be instructed that on the day of admission to have a light breakfast of tea and toast and then nothing to eat or drink for two hours pre treatment to maximize uptake and minimize the risk of vomiting. Assess and determine patients needs while in isolation and consider whether they can manage their needs or not (Nair, 2011). There must be discussion with the physicist regarding nursing intervention in the case where patient needs help, as to appropriateness prior to treatment. If help is required, and agreed to by physician and nurse, ensure staff rotation in caring for patient. Routine admission procedures such as blood tests and x-rays must be completed prior to the administration of the iodine. If there is a possibility of pregnancy, a pregnancy test is mandatory and treatment must be delayed until results are available. (Skense, Marinell & Fluharty, 2011).

***Prior to treatment***, complete nursing assessment and record any dietary requirements, baseline observations. Check consent has been signed and that the patient identity bracelet is on patient's wrist, also recommend wearing the hospital gown and has been fasted for two hours prior to administration of radioiodine. Administer antiemetic medication and remind patient of visitor restrictions. Finally, notify physicist when nursing assessment is complete (Honeybone, 2010).



***Administration of RAI dose***, iodine 131 is available in liquid and capsular forms or as an injection. It is the responsibility of a Registered Radiation Therapist or Physicist to

administer. The identity of patient must be confirmed and consent for treatment signed. Protective clothing and gloves must be worn at all times, and also patient's clothing should be protected (Monahan et al, 2010). Patient's dentures or dental plates should be removed and replaced it after drinking RAI dose also; Patients must drink the isotope through a straw, taking care not to spill it. The patient holds the straw, or the staff may use forceps to steady the straw. A non-touch technique should be used if medication is in capsular form as shown in figure (5), and a follow-up appointment with consultant should be arranged (Herbert-Ashton & Clarkson, 2009).



*Figure (5) Radiation precaution and careful handling of RAI container (2012).*

*Adopted from [www.unboundmedicine.com](http://www.unboundmedicine.com).*

***Patient care while in isolation***, patient should be observed for incidents of nausea and / or vomiting and over the subsequent days, for signs of tenderness or swelling of the thyroid area. Report to medical staff as early intervention will prevent any degree of dysphagia or shortness of breath. Patients should be physically able to attend to own cares. Any assistance required will need to comply with maintaining minimal physical contact by staff. Plenty of fluids, acceptable meals and linens must be checked each duty (Tunbridge et al., 2011).

Isolation is always difficult for the patients to endure and they required a great deal of encouragement and support from staff. Reassure patients that nurses are always available when needed. Ensure patient of ringing bell, or telephoning for nursing staff if any concerns arise. The door to the room may be left open. As

isolation progresses patients often become increasingly anxious to leave hospital, therefore it is important that an inappropriate discharge date is not given to avoid confusion and disappointment, Adopted from (International Commission on Radiation Protection, 2010).

*Advice for visitors: restrictions*, visiting is forbidden for the first 24 hours, after that, a maximum of an hour each day. It is not allowed for pregnant women or children less than 16 years of age. Visitors must keep a distance of two meters from patient, hugging and kissing are not allowed also they must not handle any of the linen, food utensils or toiletries and share food or drinks with patient (Brinkman, 2009).

*Discharge*, the time of discharge is determined by the level of radiation remaining on the patient therefore only an estimated date can be given to the patient prior to the therapy. First ablative therapy averages 4 to 5 days. Subsequent treatments may only require 2-3 days. Patients undergoing ablation must have a body count with a calibrated radiation detector to determine when they can leave hospital (Weingold, 2009).

Discharge information and instruction should be given to patients with details and in a simple way as the following; **restrictions for up to one week after discharge**: Refrain from holding and cuddling children and pregnant women or being too close to them, less than two meters, for more than a few minutes at a time. Sleeping in the same bedroom with a spouse and visiting places of entertainment or going to work should be avoided. Using own or disposable set of dishes and cutlery, avoid sharing in food preparation and restrict use of public transport. Flush the toilet twice after use and wash hands thoroughly. On discharge, prescription for thyroxine should be given, and appointments for a whole body scan and see the consultant for review must be arranged. (Baylis et al, 2011).

**Staff monitoring and safety management.** Nuclear staff should follow safety precautions when caring for RAI patients in isolation period, if staff member needs to enter the room must be careful that pregnant staff must be exempt from caring for patients on treatment. Staff must wear radiation film badge, wear gown and gloves and if patient requires any help, for example making the bed, nurse must only remain in the room for no more than 15 minutes per 24 hours. Nurse should avoid direct contact with patient where possible and do not remove any soiled linen or rubbish from the room (Walter et al., 2010).

Spill procedure must be followed if patient should vomit, avoid any unnecessary accumulation of equipment; for example, removing food from meal tray before entering room. Family and visitors should be discouraged from waiting outside the room. Feelings of loneliness or isolation may be decreased by regular communication, conversation from the door (Ramont, Niedringhans & Towle, 2013).

## CHAPTER III

### Subjects and Methods

The present study was conducted with the aim of assess the patients' knowledge, needs and problems among patients undergoing radioactive iodine (RAI) therapy. To fulfil this aim the following research questions were formulated:

**Q1:** What are the knowledge, needs and problems of the patients undergoing radioactive iodine therapy?

**Q2:** Is there a relationship between RAI patients' problems and needs?

#### **Research design:**

A descriptive explorative design was utilized in this study. This design covers two main areas of research: descriptive studies which examine one or more characteristics of a specific population, the research question about the different areas is required to build a beginning base of knowledge through description, and explorative studies which provide an in-depth exploration of a single variable (Wood & Ross-Kerr, 2011).

#### **Setting:**

The study was conducted at the Nuclear Medicine Unit in Cairo University Hospitals.

#### **Subjects:**

A sample of Convenience 65 adult male and female patients were randomly assigned to the study. Patients with hyperthyroidism and thyroid cancer receiving radioactive iodine therapy for the first time and had no other chronic diseases were recruited for this study. Patients who had metastases were excluded.

## **Tools of Data Collection**

Three tools were constructed, tested and piloted by the investigator to collect data relevant to the study: (Appendix A)

**Tool I: Sociodemographic characteristics and previous thyroid management questionnaire.** This tool was developed by the investigator to cover areas related to patient's demographic data including; age, gender, occupation, marital status, residence, educational level, history of smoking and finally previous treatment for the thyroid disorder.

**Tool II: Patient's knowledge about the treatment (RAI) assessment questionnaire.** This tool was designed by the investigator based on reviewing the related literature to assess the thyroid patients' level of knowledge about the radioactive iodine therapy and its preparations. The questionnaire is divided into three parts; the 1<sup>st</sup> part consisted of "12 questions". The 2<sup>nd</sup> part ask about the period of hospitalization after receiving RAI therapy, it consists of (4) questions while, the last part is about the period after patient discharge and the isolation at home and its precautions, this part has (30) questions, the 19<sup>th</sup> question is a checklist for the possible RAI side effects, it consists of (12) items. The total questions of the Knowledge assessment questionnaire are (48).

**Scoring system,** the questionnaire consisted of closed ended and MCQs questions, the answer of closed ended questions was either Yes or No and the MCQs answer was matched as Correct or Incorrect. If the patient answer was Yes or Correct; it scored by (1) and if the answer was No or Incorrect; it scored by zero, except the question about (the possibility of travelling to any place immediately after administration of RAI therapy) the No answer scored by (1) and Yes scored by zero. The total score of the questionnaire ranged from 0 – 47.

In the statistical presentation of the patient's level of knowledge, the score for the total of each part and the general total of sheet were evaluated as value qualitative percent as follows:

- Less than 60% (0 – 26) is considered low.
- 60% to 75% (27 – 34) is considered average.
- More than 75% (35 – 48) is considered high.

**Tool III: Radioactive iodine patient's needs and problems assessment questionnaire.** This tool was designed by the investigator after extensive literature reviewing to assess the thyroid patient undergoing radioactive iodine therapy' needs and problems. It consisted of two sections:

**Section I,** Assesses the patient's problems which consist of four dimensions: physical, psychological, social and financial/administrative. Each dimension contains sub-items as the following:

- Physical problems* (34 items): it consists of problems of mobility (6), Activities of Daily Living "ADL" (6), discomforts-bowel-bladder functions (18) and role/personal activities (4).
- Psychological problems* (29 items): it assesses the psychological sub-items as (feeling of depression (2), feeling of anxiety (5), attitude toward disease (8), autonomy (9) and spiritual issues (5).
- Social problems* (14 items): it asks about the patient's relations with others and the ability to talk about the disease with them and how they react with this condition and also their support to the patient.
- The financial and administrative issues* (4 items): it explore the patient's financial problems and if their income has affected by the illness or not. Also asking about if they have medical insurance and it is easy to afford the treatment expenditure or not.

**Scoring system.** The total items of the RAI patients' problems assessment questionnaire is (81) with a total score 162, the answer of the question about all the items "is it a problem for you?" is divided into "Yes", "Somewhat" and "No" and it is scored as:

Yes = (0) as patient has a problem, Somewhat = (1) as patient has a problem sometimes and No = (2) as patient hasn't a problem at all.

**Section 2**, Assesses the patient's needs; contains five sub-items, the 1<sup>st</sup> four ones are similar to those which assess the patient's problems but it has different question "Do you need help for this problem?" as the unsolved problem considered a need. It consists of: physical, psychological, social, financial/ administrative and informational needs. Each dimension contains sub-items as the following:

- E. *Physical needs* (34 items): it consists of needs of mobility (6), Activities of Daily Living "ADL" (6), discomforts-bowel-bladder functions (18) and role/personal activities (4).
- F. *Psychological needs* (29 items): it assesses the psychological sub-items as feeling of depression (2), feeling of anxiety (5), attitude toward disease (8), autonomy (9) and spiritual issues (5).
- G. *Social needs* (14 items): It asks if the patient needs help to maintain relations with others and the ability to talk about the disease with them and how they react with this condition and also their support to the patient.
- H. *Financial and administrative issues* (4 items): it explore the patient's financial needs and if income was affected by the illness or not. As well, it asks if patients had medical insurance and whether it is easy to afford the treatment expenditure or need help.
- I. *Informational needs* (10 items): It asks if the patient needs information about the causes of disease, clinical manifestations, lines of treatment, RAI side effects etc. also about the agencies that could provide help, follow-up regimen and how to deal with others post treatment.

**Scoring system.** The total of the needs questionnaire is (91) items with total score 172.

- **The 1<sup>st</sup> four domains**, the answer of the question about all the items "Do you need help for this problem?" is divided into "Yes", "As much as now" and "No". it scored as: Yes =

(0) if patient has a need concerning this item, As much as now = (1) if patient has a need sometimes and No = (2) as patient hasn't a need at all.

- *The 5<sup>th</sup> sub-item* (the informational needs), the answer is by "Yes" or "No" and scored: Yes = (1) and No = (0).

### **Protection of Human Rights**

An official permission to conduct the study was obtained from the Vice Dean for Higher Education and Research – Faculty of Nursing and Director of the Nuclear Medicine Unit at Cairo University Hospitals in Egypt. While meeting with Patients, the investigator provided them an explanation of the study, as well they were informed that using tools wouldn't cause any harm for them.

A written consent was taken from each patient and their family in order to participate in the study and they were assured about confidentiality of data collected. The investigator emphasized that the participation is voluntary and they have the right to decide to participate or not and even if participated they could at any time end the interview or withdraw without giving any reason.

### **Procedure**

The current study was conducted on two phases:

*Phase one: Preparatory*, permissions for data collection were obtained from the Director of the Nuclear Medicine Unit at Cairo University Hospitals. The collecting data tools were developed and constructed in Arabic language by the investigator after reviewing the related literature using journal, magazines, books and Internet search articles. Then the content validity was tested through five experts in the field of medical-surgical nursing. Modifications based on the reviewers' opinions were done, and then piloted on 10% of patients.

**Pilot study:** It was conducted on 6 patients who were later excluded from the main study sample, to judge the feasibility, clarity and reliability of tools for conducting the study, its objectivity and ability to elicit the desired information, and to estimate the time needed for filling in the sheets as well as, to identify any possible difficulties that may interfere with the data collection. No necessary modifications were needed to be done to the developed tools. This pilot study was carried out done two weeks before the conduction of the study.

**Phase two: Implementation.**

- Data for the current study were collected through the period from June, 2012 till December, 2012.
- Before conducting the study, personal communication was done with nurses, physicians and radiologists to explain the purpose of the study and gain their best possible cooperation and an exploratory visit was done in the Nuclear Unit in order to estimate the number of patients receiving RAI therapy and the suitable time for collecting data, also asking about preparing a suitable place for interviewing the patients.
- A structured interview was conducted at the waiting room before admission for receiving RAI dose; it was done individually for patients eligible for the study and their companion from family in order to explain the purpose of the study, assure confidentiality and to obtain informed consent from them. Following the Research Ethics approval mentioned before. (Appendix C).

Then, the sociodemographic data and previous thyroid management, which collected directly from the patients or their relatives after that, filling in the knowledge assessment questionnaire followed by problems/needs assessment questionnaire. The educated patients are instructed to fill in the sheets but most of them preferred that the investigator asks them all the questions and they gave the answers on them and they were asking for explanations for other issues or concerns about RAI therapy.

- The estimated time spent with each patient for collecting data ranged between 20-30 minutes; about 2 to 3 patients were interviewed daily, through one day / week, as the

RAI therapy administration was on Sunday only of each week and the possible time to meet the patients was from 10.00 am till 11.30 am.

### **Statistical Analysis:**

Data were analyzed using the statistical package for social sciences (SPSS), version 17. Numerical data were expressed as mean, standard deviation (SD) and range. Qualitative data were expressed as frequency and percentage. Relation between different numerical variables was tested using Pearson correlation coefficient. P-value less than 0.05 was considered significant.

### **Limitations of the Study**

- The number of patients was small as there is only one day for administering radioactive iodine therapy for the 1<sup>st</sup> time. As well, the suitable and allowed time to sit with patients was only before administration of RAI which lasted only for one hour or one hour and half.
- The psychological state of patients interfered with filling in the tools as some of them didn't want to answer all the questions and feel bored because they are worried about the drug and the isolation period after its administration and some patients had no idea about it.
- There is no accurate census about the actual number of patients who receive RAI therapy for the 1<sup>st</sup> time as the list of day is mixed between the therapeutic (1<sup>st</sup> time & follow-up doses) and diagnostic patients, so the investigator was taking the list and filtering it by directly asking the patients themselves.

## CHAPTER IV

### Results

The aim of the present study was to assess the knowledge, needs and problems among patients undergoing radioactive iodine therapy. The study sample consisted of 65 adult patients with thyroid disorder, who will receive radioactive iodine therapy.

To fulfill the aim of the study, the collected data were analyzed, tabulated and presented in the following order:

**First Section.** It is devoted to represent the analyzed data of the sociodemographic variables such as age, gender, level of education, occupation, residence, history of smoking and previous thyroid management. (Table 1; figure 1).

**Second Section:** concerned with the analyzed data of the knowledge assessment about the RAI therapy preparation and its related practice as it divided into three phases (pre, during & post hospitalization) and finally involves the RAI therapy side effects. (Tables 2 & 3; figure 2).

**Third section:** it displays the analyzed data of the patients' problems and needs in two parts, the first one represented the patients' problems such as physical, psychological, social and financial. While the second part represented the patients' needs regarding the same dimensions of the problems, and also, the relation between patients problems and needs. (Tables 4-11; figures 2 & 3)

**Section I: Socio-demographic Characteristics and Previous Thyroid Management: (table 1; figure 1)**

As shown in table 1, (53.8%) of the studied subjects were within age group of 40 -< 60 years with a mean age of  $42.9 \pm 10.8$  years. Concerning gender, 80% of the subjects were females and 69.2% were married. As for education, 49.2% of subjects were illiterates and 55.4% were housewives. Regarding residence, 56.9% of subjects lived in urban areas, as well as 93.8% of sample was nonsmokers.

Table (1): Frequency & percentage distribution of the sociodemographic characteristics of the study subjects (n=65).

Variables	No	%
Age in years.:		
20 -	6	9.2
30 -	19	29.2
40 -	21	32.3
50 -	14	21.5
60 – 70	5	7.7
<b>Mean ± SD</b>		<b>42.9 ± 10.8</b>
Gender:		
Male	13	20.0
Female	52	80.0
Occupation:		
House wife	36	55.4
Public work	29	44.6
Marital status:		
Single	6	9.2
Married	45	69.2
Divorced	14	21.5
Residence:		
Urban	37	56.9
Rural	28	43.1
Level of education:		
Cannot read and write	32	49.2
Preparatory & secondary school	20	30.7
University & High studies	13	20.0
History of Smoking:		
Yes	4	6.2
No	61	93.8

Regarding the previous treatment for the thyroid disorder figure (1) Shows that (36.9%) of subjects received medical management only, while 63.1% of them received both medical and surgical treatments before coming to receive RAI therapy.

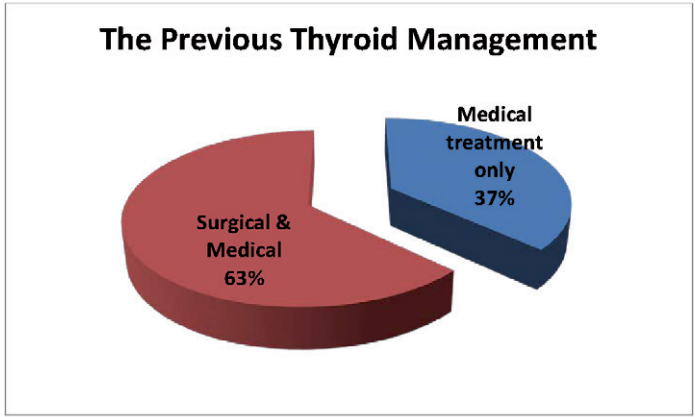


Figure (1): Percentage distribution of the previous thyroid management among the study subjects (n= 65)

**Section II: Knowledge assessment: table (2&3)**

Table (2) displays that (73.8%) of subjects had average level of knowledge regarding pre-admission preparations also for the patients' knowledge during hospitalization period, (38.5%) of subjects had average level of it. About the post-discharge period and patient's isolation at home (70.8%) of subjects had low level of knowledge. Total knowledge level indicated that (66.2%) had low knowledge level about RAI therapy and its preparations.

*Table (2) Frequency & percentage distribution of knowledge level of the study subjects (n=65):*

Period		Low		Average		High	
		N	%	N	%	N	%
I.	Pre- admission preparations.	11	16.9	48	73.8	6	9.2
II.	During hospitalization.	24	36.9	25	38.5	16	24.6
III.	Post-discharge period (home).	46	70.8	14	21.5	5	7.7
	Total knowledge.	43	66.2	11	16.9	11	16.9

RAI therapy' side effects were represented in table (3) as it shows that (78.5%) of them reported taste change and (73.8%) had dry mouth (73.8%) while (49.2%) of subjects complained from headache & drowsiness then (38.5%) had inflammation of salivary glands and (27.7) of them reported dryness of eye. less reported side effects were neck pain (15.4), colic (12.3%) etc.....

Table (3) Frequency & percentage of the Radioactive Iodine Therapy' side effects among the study group (n=65):

Side effects	n	%
Headache & drowsiness	32	49.2
Neck & salivary gland problems:		
Neck pain	10	15.4
Taste change	51	78.5
Inflammation of the salivary glands	15	38.5
Dry mouth	48	73.8
Gastrointestinal effects:		
Colic	8	12.3
Urinary problems:		
Change in the urine color	6	9.2
S&S of hypothyroidism:		
Gaining of wt, hair fall, etc...	6	9.2
Dryness of eye	18	27.7

N.B. responses are not mutually exclusive.

### Section III: Problems and needs assessment: table (4 – 11) and figure (2 & 3)

#### III-1: Problems assessment

It was observed from table (4) that about (60.0%) of the subjects complaining from difficulties in walking and standing, (58.5%) of them cannot enter the toilet independently, (67.7%) of the studied group had problem in climbing stairs and (69.2%) had difficulty in using the personal transportation. In relation to shopping (61.5%) of subjects not able to do it alone.

Table (4): Frequency & percentage distribution of the study subjects who complaining from **mobility problems** (n=65).

Mobility	N	%
Difficulty in walking	39	60.0
Difficulty in standing	39	60.0
Difficulty in entering the toilet	38	58.5
Difficulty in climbing stairs	44	67.7
Difficulty in using means of transportation	45	69.2
Difficulty in shopping	40	61.5

Regarding problems related to Activity of Daily Living (ADL), table (5) reveals that the less reported problems were for eating (6.2%), self hygiene (20%), dressing (21.5), preparing food (27.7%) & lighthouse work (26.2%). While (58.5%) of subjects had a problem in doing heavy house works.

Table (5): Frequency & percentage distribution of subjects who complaining from activities of daily living problems (n= 65)

Activities of Daily Living	N	%
Difficulty in self hygiene	13	20
Difficulty in dressing	14	21.5
Difficulty in eating	4	6.2
Difficulty in preparing food	18	27.7
Difficulty in light house works	17	26.2
Difficulty in heavy house works	38	58.5

In relation to discomfort problems, as shown in table (6), (73.8%) of subjects had generalized pain and (decreased level of concentration, while nearly almost (81.5%) of them complained from fatigue all the time. For the sleeping problems; (50.8%) of cases had disturbed sleeping, and (81.5%) most of them hadn't diarrhea or constipation and the same percent (76.6%) of the studied group, didn't complain from incontinence, itching & cough. (75.4%) of subjects experienced loss of appetite and taste change as well as (60.0%) of them had swallowing problems also most (78.5%) of them didn't report any sexual dysfunction. (73.8%) of subjects; complained from shortness of breath and numbness. For the nightly sweating; most (78.5%) of the studied subjects complained of it.

Table (6): Frequency & percentage distribution of the study subjects who complaining from **discomfort problems** (n=65).

<b>Discomfort problems</b>	N	%
Generalized pain	48	73.8
Respiratory problems:		
Shortness of breath	48	73.8
Cough	8	12.3
Gastrointestinal & Urinary :		
Loss of appetite & change in taste	49	75.4
Mouth& swallowing problems	39	60.0
Nausea or vomiting	24	36.9
Incontinence	14	21.5
Constipation & diarrhea	12	18.5
Neurological :		
Decreased concentration	47	72.3
Prickling or numb sensation	47	72.3
Sleeping problems	33	50.8

Impaired hearing & vision	19	29.2
Circulatory :		
Weakness & fatigue	53	81.5
Hands & legs edema	3	4.6
Sweating & hot flushes (nightly)	51	78.5
others:		
Hair fall	14	21.5
Itching	2	3.1
Sexual dysfunction	14	21.5

Regarding problems related to the personal activities, table (7) revealed that (73.8%) of the studied group had difficulty in daily activities however, (52.3%) of subjects complained from difficulty to manage the work/study. (50.8%) of them couldn't provide care for their family, and finally (40.0%) of them experienced difficulty in relaxing.

*Table (7): Distribution of the study subjects who complaining from the role/personal activities problems (n=65).*

Role/Personal activities	No	%
Difficulty in daily activities	48	73.8
Difficulty in work / study	34	52.3
Difficulties in caring of children	33	50.8
Difficulty in relaxing	26	40.0

Table (8) reveals that, the highly reported social concerns were regarding the feeling of loneliness (53.8%), and (49.2%) had difficulty to talk about the disease with others, while (38.5%) of them had difficulty in the contact with others like the family & neighbors. (30.8%) of subjects reported that the others are over concerned about the disease. The other social issues are less reported by the subjects.

*Table (8): Frequency & percentage distribution of the social problems among the study subjects n=65*

Social issues	No	%
Loneliness	35	53.8
Difficult to talk about the disease with others	32	49.2
Contact with the family, friends, neighbors or colleague	25	38.5
Others being over-concerned	20	30.8
Difficulties in talking about the disease with life companion	12	18.5
Difference of opinion about the lines of treatment	12	18.5
Others dramatizing the situation	12	18.5
Being forsaken by others	12	18.5
Difficulties in finding a confident someone to talk to	11	16.9
Receiving too little practical help from life companion or family	11	16.9
Relations with life companion	10	15.4
Contact with the children	9	13.8
Finding others not receptive to talking about the disease	9	13.8
Others denying the severity of the situation	8	12.3

Regarding psychological problems, it can be noticed from fig. (2) that (81.5%) of study subjects complained from a depressed mood & not to feel any happiness and experiencing the feeling of anxiety. Regarding the spiritual issues (75.4%) had problems in maintaining it, as well as (56.9%) had difficulty in felling autonomy, while (49.2%) of subjects had fears and negative attitude toward the disease.

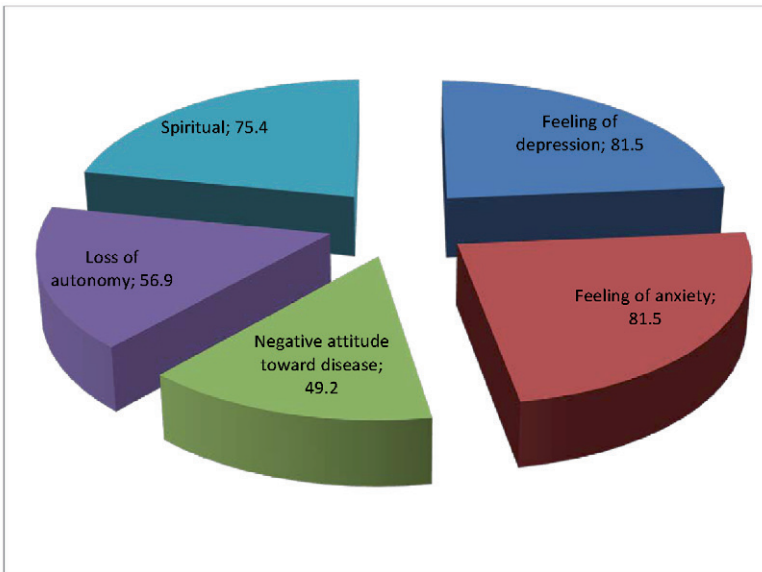


Figure (2): Percentage distribution of the study subjects who complaining from psychological problems (n=65)

Figure (3): displays percentage distribution of the study subjects according to their financial & administrative problems. It illustrated that (78.5) of patients complaining from extra expenditure related to the disease, in addition, (58.5) had reduced income after illness. (70.0) of subjects reported difficulty in sharing family in the costs & getting medical insurance.

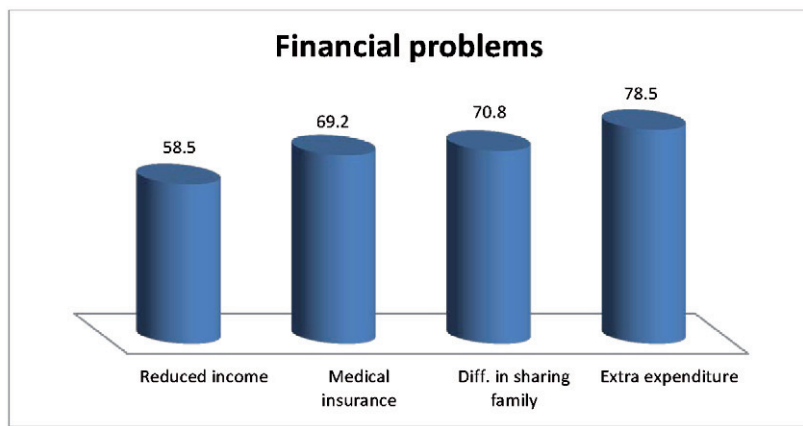


Figure (3): Percentage distribution of the study subjects who complaining from financial problems (n=65)

### III-2: Needs assessment:

Table (9) displays the thyroid patients' needs which divided into physical needs with sub items (mobility, activities of daily living, discomfort-bowel & role/personal needs). Financial, social & psychological needs which include: feeling of depression, feeling of anxiety, attitude toward disease, autonomy & spiritual needs. It was observed that (53.8%) of the subjects reported the needs of the role and personal activities (89.2%) had needs in the psychological issues (feeling of depression & autonomy) and the spiritual needs for half of patients (53.8%). The financial needs considered from the highly reported needs (78.4%).

*Table (9): Mean, standard deviation and percentage of reported needs of the study subjects (n= 65)*

Needs	Weighting	Mean $\pm$ SD	Percentage of needs
<b>Mobility</b>	12	7.45 $\pm$ 2.68	33.8
<b>Activities of daily living</b>	12	8.73 $\pm$ 2.73	24.6
<b>Discomfort, bowel &amp; bladder functions</b>	36	25.96 $\pm$ 4.32	43.1
<b>Role/personal needs</b>	8	2.95 $\pm$ 1.46	53.8
<b>Financial</b>	8	3.89 $\pm$ 2.60	78.4
<b>Social</b>	28	20.03 $\pm$ 4.72	33.8
<b>Feeling of depression</b>	4	1.96 $\pm$ 0.96	89.2
<b>Feeling of anxiety</b>	10	3.86 $\pm$ 1.87	36.9
<b>Attitude toward disease</b>	16	9.01 $\pm$ 1.64	30.8
<b>Autonomy</b>	18	6.43 $\pm$ 2.80	46.2
<b>Spiritual</b>	10	5.33 $\pm$ 2.08	53.8
<b>Total</b>	162	95.6 $\pm$ 27.86	59.01

It was observed in table (10) that all the study subjects (100%) need information about the physical symptoms of disease, different treatment lines, RAI side effects and how to overcome it, suitable nutrition, follow – up schedule and finally how to deal with others after discharge. About three quarters of patients (73.8%) need to know about the places and agencies which could help them to adapt with illness, also near to this percent (66.2%) ask about the causes of their disease. Finally the less reported informational need was about the sexual ability with percent (40%).

Table (10): Frequency & percentage distribution of informational needs which reported by the study subjects (n=65)

Informational Needs	N	%
Places & agencies	48	73.8
Causes of disease	43	66.2
Physical symptoms	65	100
Different treatment lines	65	100
RAI side effects	65	100
Suitable nutrition	65	100
Sexual ability	26	40
How to overcome side effects	65	100
Follow-up	65	100
Dealing with others	65	100

Table (11) shows that there is a correlation between the physical problems and physical needs and also the total of problems. Psychological problems had a correlation with total of problems. Social problems had a negative correlation with financial needs, also financial problems with physical needs. Physical, psychological, social and financial needs had a correlation with total of needs.

*Table (11): Correlation between the study subjects' problems and needs (n=65)*

	<b>Physical Needs</b>	<b>Psychological Needs</b>	<b>Social needs</b>	<b>Financial Needs</b>	<b>Total of problems</b>
<b>Physical problems</b>	<b>.430**</b>	<b>-.150</b>	<b>.060</b>	<b>.177</b>	<b>.703**</b>
<b>Psychological problems</b>	<b>-.240</b>	<b>.061</b>	<b>-.052</b>	<b>-.307</b>	<b>.820**</b>
<b>Social problems</b>	<b>-.132</b>	<b>-.205</b>	<b>.037</b>	<b>-.335**</b>	<b>.613**</b>
<b>Financial problems</b>	<b>-.369**</b>	<b>.088</b>	<b>-.003</b>	<b>-.237</b>	<b>-.007</b>
<b>Total of needs</b>	<b>.758**</b>	<b>.634**</b>	<b>.385**</b>	<b>.569**</b>	<b>-.041</b>

\*. Correlation is significant at the 0.05 level.

\*\* . Correlation is significant at the 0.01 level

## CHAPTER V

### Discussion

Differentiated thyroid cancer (DTC), which includes papillary and follicular cancer, comprises the vast majority (90%) of all thyroid cancers. Postoperative complementary radioiodine ( $^{131}\text{I}$ ) therapy is the standard treatment for the DTC. Aim of this therapy is to destroy thyroid remaining cells to remove their competition with cancer cells for secretion of thyroglobulin or  $^{131}\text{I}$  uptake, and to treat putative cancer micrometastases. Only the adjuvant  $^{131}\text{I}$  therapy enables the detection of functional micrometastases, which are visible during the post-therapeutic total body scan (Pacini et al., 2009).

Therefore, the aim of this study was to assess the knowledge, needs and problems among the thyroid patients undergoing radioiodine therapy. To fulfill this aim the knowledge, problems & needs assessment questionnaires were constructed by the investigator and data were collected through interviewing the patient individually. A convenience sample of 65 adult thyroid patients who will receive radioactive iodine therapy were chosen from the nuclear unit at Cairo University hospitals.

To achieve this aim, research questions were stated as:

Q1: What are the knowledge, needs and problems of the patients undergoing radioactive iodine therapy?

Q2: Is there a relationship between RAI patients' problems and needs?

The discussion of the study was presented in the following sequence: Section I presents the description of the socio-demographic characteristics and previous thyroid management of the study subjects. Section II elaborates the findings of the knowledge assessment as it presents the patients' level regarding the pre-admission

preparations, hospitalization period and post-hospitalization isolation and influences at home. Also it involves patients' information about RAI side effects. Finally, the third section is concerned with displaying patients' problems physically, psychologically, socially and financially, it also highlighted the needs of those patients in these areas, in addition to their informational needs and finally, correlates between patients' problems and needs.

### **Section I: Socio-demographic characteristics and history of previous thyroid management**

This section includes socio-demographic variables as age, gender, occupation, educational level, place of residence and marital status. The current study indicated that majority of patients were female and high percentage were married, and more than half of them aged from forty to fifty years old with a mean of  $42.9 \pm 10.8$ . Approximately half of them were illiterate and housewives, lived in urban areas and the majority of patients were nonsmokers.

These findings were supported by the American National Institutes of Health (2012) which revealed that about 80% of all thyroid cancers diagnosed in the United States are the papillary carcinoma type. This type of cancer is more common in women than in men. It may occur in childhood, but is most often seen in adults between ages 30 and 50. In this respect also, American Cancer Society (2008) revealed that about 20.700 new cases of thyroid cancer are diagnosed each year. Women account for 15.800 of the new cases and men 4.900 and it is more common at the middle and older age group who wasn't concerned with the periodic check-up as in the illiterate persons.

As regards educational level, half of the study subjects cannot read and write and about one third of them had preparatory & secondary school education level. This is congruent with Abdoun's study (2011) who investigated (Egypt's illiteracy rate) and

reported that illiteracy rate is higher among women than men in Egypt besides that, women account for 69% of the total number of illiterate people in Egypt.

In the current study, the results showed that more than two thirds of participated patients were married and more than half of them were housewives. This could reflect Egyptian culture which encourages early marriage and women should be non-worker, especially among low socio cultures classes. This matched with the findings of Abd-el Fattah (2012) study about (Impact of nursing educational program on patients' outcome among patients undergoing thyroidectomy at El-Manial university hospital) which revealed that about (71.7%) of subjects aged from 30-50 years old, and majority of them were female, married and house wives.

The study revealed that more than half of subjects were living in urban areas. From the investigator's point of view, it may be due to the prevalence of known risk factors or the average regional environmental exposure to air pollutants among urban inhabitants. This finding contradicted with Roskosz et al. (2010) who studied **“Early evaluation of treatment effectiveness using 131I iodine radiotherapy in patients with differentiated thyroid cancer”** and stated that **the highest percentage of the included sample were from rural areas.**

**In relation to the previous thyroid treatment, the study finding revealed that nearly two thirds of study subjects received medical and surgical treatment before coming to receive RAI therapy. This finding is supported by Abd-el Mon'm (2013) in his study about (Hyperthyroidism management by RAI ablation) recommended that every patient should receive RAI dose as a complementary line of management. In the same line, Kukulska et al. (2009) study entitled with (Optimization of 131I ablation in patients with differentiated thyroid carcinoma: comparison of early outcomes of treatment with 100 mCi versus 60 mCi.) reported that it is important to follow surgical management by medical and RAI ablation to end any remaining of cancer cells. Speaking in the same**

stream, Chow (2006) in his study of (side effects of high-dose radioactive iodine for ablation or treatment of differentiated thyroid carcinoma), reported that radioactive iodine benefits patients with thyroid cancer by treating recurrences and in reducing relapses after operation.

To sum up, the current study revealed that high percentage of subjects were female, married, housewives, aged from forty to fifty years old and half of them were illiterate.

## **Section II: Knowledge assessment**

This section contains the answer of the research question: what is the patients' knowledge about RAI therapy preparations? Assessment findings are devoted to three phases; pre-admission, during hospitalization and post-discharge (isolation at home). For total patients' level of knowledge of RAI therapy, the results of the current study showed that about two thirds of the study subjects had low knowledge level. For the pre-admission preparations, about three fourth of the study subjects had average level of knowledge and also more than one third for the hospitalization period. While the last phase (isolation at home), more than two thirds of study subjects had low level of knowledge.

From the investigator's point of view, these results were matched with the policy of the nuclear unit at hospital which stated that patients take the appointment to receive RAI therapy and told them the pre- admission preparations. And when they came to be hospitalized and before entering to receive RAI dose, the physician collect all patients and give them the instructions about the hospitalization period and what they will do after discharge (isolation at home) so when the investigator interviewing the subjects before receiving RAI dose and assessing their information about the post discharge period, few of them only gave the correct answers.

This result is matched with Llewellyn, McGurk & Weinman (2011) in study entitled: How satisfied are head and neck cancer (HNC) patients with the information they receive pre-treatment? Results from the satisfaction with cancer information profile (SCIP) who found that patients were generally satisfied with information when they receive it before starting the management, however key areas of improvement were identified, such as the provision of information about support groups, where to go for financial advice and the long-term effects of treatment on ability to work, physical functioning and QoL. Also this study highlighted the need for tailored information provision and the impact on longitudinal outcomes of satisfying patient's needs for information prior to treatment.

In this respect, Meulen, Leeuw, Gamel & Hafsteinsdóttir (2012) in their study about "Educational intervention for patients with head and neck cancer in the discharge phase" recommended that the educational program should be given before starting the treatment as if it given at the time of discharge, the percent of efficiency was low. In the same context, Cooper et al. (2011) in study entitled "Hyperthyroidism and Other Causes of Thyrotoxicosis: Management Guidelines of the American Thyroid Association and American Association of Clinical Endocrinologists", concluded that physicians who administer the radioactive iodine should provide written advice concerning radiation safety precautions following treatment.

The current study revealed that about three fourth of the subjects reported taste change and dry mouth as a common RAI side effects. Similar finding was documented in Fouad (2011) study about (using RAI in thyroid diseases' diagnosis and treatment) who reported that neck and salivary gland problems are common with RAI therapy. As well as Chow (2006) study regarding (side effects of high-dose radioactive iodine for ablation or treatment of differentiated thyroid carcinoma) showed that about 65.2% of sample complained from loss of appetite, dry mouth, taste change and neck pain, due to the mechanism of action of RAI which concentrated in the thyroid gland, so the early side effects are present at neck area.

To sum up, two thirds of patients had low knowledge level, so it is highly recommended to provide a suitable educational program before coming to receive RAI therapy to increase the efficiency of it.

### **Section III: RAI therapy patients' Problems / needs assessment:**

This section is concerned with finding the answer of problems / needs of the patients who undergoing RAI therapy? The following domains are assessed and presented in results as physical, psychological, social & financial.

**Physical problems / needs** will cover the following sub items namely:

#### **Mobility, activity of Daily Living (ADL) and role/personal activities problems / needs:**

Thyroid patients confronted a large group of difficulties especially in the physical activities like walking, standing, going upstairs etc. As evident from the current study about two thirds of the subjects complaining from walking, standing, climbing upstairs and more than half of them need assistance in shopping and using means of transportation. Regarding subjects complaining of problems in activity of daily living (ADL) and personal role, more than half of them had a problem in doing heavy house works and more than one fourth of patients complained from difficulties in preparing food and light house works. However less than three fourth of sample had difficulty in daily activities and half of them complained from difficulty to manage the work/study and couldn't provide care for their family. **For the subjects needs**, the results revealed that about one third of subjects need help & assistance in mobility and ADLs while half of them need help in doing personal activities.

In their study, Jemal et al. (2004) confirmed that as a result of advances in early detection and treatment, in the past two decades the 5-year survival rate for the

15 most common cancers has increased for all ages—from 43 to 64 % for men and from 57 to 64 % for women. However, these improvements in survival are sometimes accompanied by permanent damage to patients' physical health. In addition to the damage caused by the cancer itself, the side effects of chemotherapy, radiation, hormone therapy, surgery, and other cancer treatments often lead to substantial permanent impairment of several organ systems, with resultant disability as documented by (Aziz and Rowland, 2003; Oeffinger and Hudson, 2004).

These results are congruent with Meulen, Leeuw, Gamel & Hafsteinsdóttir (2012) in their study regarding “Educational intervention for patients with head and neck cancer in the discharge phase” which showed that patients need information and help concerning physical fitness as they complained from difficulties in carrying out their daily activities, work and not able to play their familial role. Also in this respect, Richardson (2005) revealed that most of thyroid patients complained from unsatisfactory level of activity which interferes with their quality of life (QoL) and push them to ask for assistance for doing their different daily activities.

Another study done by Ness et al., (2005) in USA concluded that thyroid cancer patient reported limitations in activities such as lifting heavy objects; running or participating in strenuous sports; carrying groceries; walking uphill or climbing a flight of stairs; walking a block; or eating, dressing, bathing, or using the toilet. These limitations occurred at nearly twice the rate found in their siblings without cancer. Fewer percent reported limitations in ability to eat, bathe, dress, or get around their home by themselves; perform everyday household chores; or hold a job or attend school. However, these rates were five to six times higher than those seen in their siblings without cancer.

These findings about the physical needs are also supported by Pieper (2006), who studied the informational needs of thyroid patients prior to their discharge and

reported that the physical and daily activities are considered from the most concerns for such patients.

### **The discomfort, bowel & Bladder functions problems / needs**

This study showed that about three fourth of the studied group was suffering from fatigue, discomfort, shortness of breath and nightly sweating and more than half of them complained from swallowing problems and about half of them had sleep disturbance. Almost one fifth of the study subjects complained from hair loss and sexual dysfunction. The least reported problems were cough, itching, and limbs edema. In relation to their needs about these issues, near half of them need help to relieve their discomforts.

The results of the current study were on the same line with those of Richardson (2005) which documented a group of discomforts as generalized pain/fatigue, shortness of breath, mouth/swallowing problems, loss of appetite and change in taste, decreased concentration, sleeping problems, nightly sweating / hot flushes and prickling or numb sensation are considered the main complaints of the patients receiving RAI therapy especially in the out-patients visits and most of them ask for medical help or interference to know how to relieve them.

The findings of the present study agreed with the study done by Carr et al. 2007 who mentioned that fatigue is widely recognized as a frequent side effect of both cancer and its treatment. It is different from the fatigue experienced by healthy individuals in that it persists even after rest and sleep. A 2006 review of the evidence by the Agency for Healthcare Research and Quality (AHRQ) found that mechanisms of cancer-related fatigue have been poorly explored, and current treatment options for fatigue are limited. In the same line, Molassiotis et al. (2009) denoted that the thyroid cancer patients receiving RAI experienced nausea, pain, fatigue, loss of appetite, taste change and insomnia.

## **Psychological and social problems / needs**

The results of current study documented that the majority of subjects complaining from feeling of depression and feeling of anxiety, while three quarters of them were complaining from problems related to spiritual issues. Finally about half of the sample experienced loss of autonomy and negative attitude toward their disease. For the subjects' psychological needs, the results of this study showed that about half of them needs help to improve their psychological problems like spiritual issues problems and autonomy, while the majority of subjects and more than one third of them need assistance to get rid of feeling of depression and feeling of anxiety respectively. For the social problems, about half of them complained from feeling of loneliness, the contact with others like the family & neighbors, the talk about the disease with others. For these issues the expressed social needs were reported by only one third of subjects.

From the investigator's point of view; in spite of most of patients complained from psychological problems, the presented percentage of their asking for assistance or expressing their needs was low. These results may be due to nature of the Egyptian people's culture and traditions which prevent many patients of expressing their needs, feeling ashamed in asking help either physically, psychologically or socially, from their relatives or just to ventilate their fears and anxiety, also they didn't express their need for social support from relatives. So when dealing with such patients, it is recommended to provide a biopsychosocial support for them.

The current study's findings and recommendation came in congruence with Harralson, et al (2013) study about (A randomized control trial to test a computerized psychosocial cancer assessment and referral program: Methods and research design) which reported that providing a comprehensive psychosocial assessment that identifies, addresses, and monitors physical, psychological, and social issues faced by oncology patients. Patients in the intervention group were provided detailed,

personalized reports and, when needed, referrals to mental health services; their oncology provider received detailed reports designed to foster clinical decision making. Those patients who demonstrated high levels of psychosocial problems were given the option to authorize that a copy of their report be sent electronically to a “best match” mental health professional.

These results were also supported by Leppert, Majkowicz and Ahmedzai (2012) in their study entitled “The Adaptation of the Sheffield Profile for Assessment and Referral for Care (SPARC) to the Polish Clinical Setting for Needs Assessment of Advanced Cancer Patients” recommended that assessment of the needs and problems of advanced cancer patients is a very important issue in their care; communication and need for more information items were associated with psychological, social, spiritual, and treatment issues.

In accordance, Lewellyn, McGurk & Weinman (2011) conducted a study of “psycho-social and behavioral factors related to health related-quality of life in patients with head and neck cancer. A systematic review”, the current study's findings were matched with their results as they emphasized the importance to assess the patients' personality traits, social support, behavioral factors, satisfaction with consultation and information, then interventions can be designed with the aim of improving a patient’s long-term well-being.

The current study's findings about physical, psychological and social problems/needs were in the same line with, [Coolbrandt, et al. \(2013\)](#) study about characteristics and effectiveness of complex nursing interventions aimed at reducing symptom burden in adult thyroid cancer patients: A systematic review of randomized controlled trials, who recommended that providing a complex nursing interventions based on a systematic review of patients' problems, produce clinically meaningful and statistically relevant reductions in symptoms burden.

## **Financial problems/needs**

The present study results revealed that most of subjects complained from financial problems and need help to relieve it or to get a medical insurance to cover the extra expenditures of disease and therapy. Also more than half of them reported that their income was decreased after illness and they found difficulties in sharing their families in the treatment' costs.

From the investigator's point of view as the majority of study subjects were female, illiterate and house wives so, most of them didn't had personal income or medical insurance and dependant on their families in managing disease's costs, all these issues increase the of financial problems/needs that leads to an additional psychological stress. This finding is consistent with the **USA Today, Kaiser Family Foundation and Harvard School of Public Health (2008)**, which demonstrated through a national survey study about households affected by cancer, that financial needs can arise from the high costs of treatment and drugs and these costs are offset by difficulties in having medical insurance.

This comes in agreement with unpublished master thesis of Mahdy, (2010) about “Informational needs and concerns among thyroid cancer patients after surgery” which indicated that the majority of studied subjects had insufficient income especially women and need help to had a medical insurance. As well as **Chul-Woung et al. (2007)**, in study about “Inequalities in cancer incidence and mortality across income groups and policy implications in South Korea”, who highlighted that the relative risk of cancer incidence in the lowest income group was 1.65 and 1.43 times higher than that in highest income group for males and females, respectively.

## **Informational needs and concerns of RAI therapy patients**

Concerning the areas of highest informational needs, the results of the present study indicated that all subjects need information about physical symptoms of disease, different treatment lines, RAI side effects and how to overcome it, suitable nutrition, follow – up schedule and finally how to deal with others after discharge. Also about three quarters of patients need to know about the places and agencies which could help them to adapt with illness and the causes of their disease. Finally the less reported informational need was about the sexual ability. This is supported by **Rutten et al. (2007)**, study about “informational needs and sources of information among cancer patients: A systemic review of research.” who identified that the most frequent information needs was treatment-related.

Similarly a study conducted by Rosenthal (2008), about “Patient Misconceptions and Ethical Challenges in Radioactive Iodine Scanning and Therapy” recommended that the unmet informational needs and patients questions lead to misconceptions and difficulty in decision making. Also these findings were approved by Sawka et al. (2010) study regarding “Decision aid on radioactive iodine treatment for early stage papillary thyroid cancer - a randomized controlled trial” who found that the medical team should provide all information and explanations before starting RAI therapy to clarify patients' informational needs and help them in decision making.

## **Correlation between RAI therapy patients' problems and needs**

It was surprising to the investigator that the study results cleared that there is a positive correlation between physical problems and needs and the total of problems with physical, Psychological and social problems. Physical, psychological, social and financial needs had a positive correlation with total of needs. A negative correlation appeared between social problems had financial needs, also financial problems with

physical needs. From the scope of considering the unmet needs as problems so they are correlated with each other, these results are supported by **Grant, et al. (2009)** in a study about “Patients’ issues and needs: perspectives from patients with thyroid cancer. A qualitative study” who documented that there is a relation between the patients’ concerns and needs and forced towards a further researches to investigate this relation and its effects.

**To sum up**, analyses of the study findings had revealed that majority of subjects complained from a lot of problems / needs in many different areas such as physical, psychological, social and financial; also patients are lacking knowledge, and therefore are in need for information that might help patients' participation in achieving successful outcomes of the treatment plan.

## CHAPTER VI

### Summary, Conclusion & Recommendations

This chapter summarizes the findings of the current study as it relates to the stated questions. Professional implications and recommendations for future researches are also suggested.

#### Summary

Oral administration of radioactive iodine has been a commonly accepted procedure for treatment of benign and malignant conditions of the thyroid since the 1940s. Physicians and nurses responsible for treating such patients should have an understanding of the clinical pathophysiology and natural history of the disease processes, should be familiar with alternative forms of therapy, and should be able to collaborate closely with each others involved in the management of the patient's condition. The caring nurse should either see patients in consultation with the physician assuming overall management of the patient's condition or be prepared to assume that role. In the United States, the treating physician should be board certified in Nuclear Medicine, Radiology, or Radiation Oncology or be able to document equivalent training, competency, and experience in the safe use and administration of therapeutic amounts of I131. In the same, line the nuclear nurse should be able to provide a comprehensive assessment of patients' problems and needs and their informational needs to maximize the effectiveness of RAI therapy.

Nuclear medicine and general surgery are often interacted in the management of patients with thyroid cancer. Although certain controversies exist regarding the therapy, 131I ablation therapy plays a major role in the postoperative treatment regimen. Rationale that supports the use of I131 ablation as an adjuvant therapy was evidenced in several studies. Also, the well established clinical practice guidelines for thyroid disease have been addressed in previous articles. However, neither relevant nor specific clinical pathway has been developed for the I131 treatment (Ghoraryed, 2009).

The present study was conducted with the purpose of assessing the patients' knowledge, needs and problems among patients undergoing radioactive iodine therapy. To fulfil this aim the following research questions were formulated:

Q1: What are the knowledge, needs and problems of the patients undergoing radioactive iodine therapy?

Q2: Is there a relationship between RAI patients' problems and needs?

The study was conducted at The Nuclear Medicine Unit at Cairo University Hospitals, sixty five adult thyroid patients who will receive the radioactive iodine therapy for the 1<sup>st</sup> time were included.

Data were collected using three tools designed by the investigator & tested for validity and reliability:

- The 1<sup>st</sup> tool is: A structured questionnaire. It included: sociodemographic characteristics, and previous thyroid management.
- The 2<sup>nd</sup> tool named: The patient's knowledge about the RAI therapy questionnaire.
- The 3<sup>rd</sup> tool is: Radioactive iodine patient's needs and problems assessment questionnaire.

The main findings of this study were:

- The majority of the patients with thyroid disorders are females (80%) with a mean age of  $42.9 \pm 10.8$  years. As for education, about half of them (49.2%) are illiterates and more than half of the studied group (55.4%) was housewives and more than half (56.9%) of subjects lived in urban areas, as well as the majority (93.8%) of sample were nonsmokers. Finally, regarding the previous treatment, nearly two thirds (63.1%) received both medical and surgical treatments before receiving RAI therapy.

- Regarding to the thyroid patients' knowledge level about the radioactive iodine therapy, the study revealed that about two thirds of them (66.2%) had lack of knowledge and need to know about RAI treatment and its precautions. The highest revealed lack of knowledge (70.7%) was about the post-discharge period.
  
- As for patients' problems, the study main findings revealed that patients were complaining from the following problems:
  - Concerning mobility problems, about two thirds of subjects (67.7%) had problems in climbing stairs and using means of transportations alone.
  - Regards ADL problems, more than of half of subjects (58.5%) had difficulty in doing heavy house works, and more than half of them (50.8%) had difficulty in presenting care for their children.
  - As for physical discomfort; fatigue, disturbed sleeping, shortness of breath, limbs edema and nightly sweating they represented high percentages ranging between ranged 73.3% and 78.5%, and the least reported percentages were incontinence, itching and sexual dysfunction ranging between 18.5% and 31.5%.
  - Concerning financial problems, three quarters of subjects (78.5%) were complaining from extra expenditure related to the disease and reduced income.
  - The highest reported social concerns were related to the feeling of loneliness (53.8%), and (49.2%) had difficulty in talking about the disease with others.
  - Regarding problems of the psychological issues: the majority of the study subjects (80.0%) reported having depressed mood and not feeling any happiness as well (83.1%) had loss of autonomy.
  - More than two thirds of patients (70.7%) were experiencing the feeling of anxiety during this period and (67.6%) had fears and negative attitude toward the disease, and the least reported concerns were regarding the spiritual issues (55.4%).

### **Regarding the patients needs:**

- Most (93.8%) of the subjects reported the needs of the role and personal activities also the majority of them (89.2%) were in need for support in the psychological issues (feeling of depression & autonomy) and concerning spiritual needs, they accounted for more than half of patients (53.8%). The financial needs were considered from the main reported needs by 78.4% of the patients.
- Considering the informational needs, all the study subjects (100%) need information about the physical symptoms of disease, different treatment lines, the RAI side effects and how to overcome them, suitable nutrition, follow – up schedule and finally how to deal with others after discharge. About three quarters of patients (73.8%) need to know about the places and agencies which could help them to adapt with illness, also two thirds of them (66.2%) ask about the causes of their disease. Finally the least reported informational need was about the sexual ability with a percent of (40%).

Based on the previous summary, one can conclude that:

- There is a need to plan and conduct an in-service training program to the nuclear nursing staff to acquaint them with management package of knowledge to radioactive iodine therapy to provide patients with their unmet informational needs prior to their discharge.
- Effective communication between patients undergoing RAI therapy and the health care team is important since it helps patients to express their feelings and alleviate their emotional stress.
- Using educational program to all patients undergoing radioactive iodine therapy to improve their quality of life.

## **Conclusion**

Based on the findings of the present study, it can be concluded that patients undergoing radioactive iodine therapy had greater informational needs about treatment and its implications, also they had physical, psychological problems and needs. Additionally, they had a high level of concerns regarding the effect of disease and its treatment on their social and personal role. Therefore, those patients have shown many areas of knowledge deficits which reflect a need for education relevant to their conditions and needs.

Informational needs were the highest prevalent needs of patients, also the physical and psychological consequences of disease were the highest prevalent ones affecting patient's health and personal role. The study revealed some areas of knowledge deficits especially about the post-treatment period and isolation at home. The financial factors and problems are significantly associated with occurrence of disease and role change in family.

## **Recommendations**

On the light of the finding of the present study, the following recommendations can be suggested:

- **For patients:**

- Patients should be provided with simple, illustrated guide booklet to provide them with the needed information about the RAI therapy.
- Patient's education is a very important element in improving patient quality of life so; it must be emphasized before administration of radioactive iodine therapy and continued after receiving it.
- Planning sessions of discussion between newly and previously treated patients undergoing RAI therapy to exchange their experiences with them which may help improve the outcomes.
- Multidisciplinary team should be collaborating in management of patients undergoing RAI therapy and helping them to overcome their problems and needs. The nuclear nurses should inform those patients about different resources that can help patients during their disease process.

- **For hospital administration:**

- There is a need to plan and conduct an in-service training program to the nuclear nursing staff to acquaint them with the needed package of knowledge related to radioactive iodine therapy to be able to provide patients with their unmet informational needs prior to their discharge.
- Effective communication should be established between patients and the nuclear health care team to help patients express their feelings and alleviate their emotional stress.

- Conduct educational program to all patients undergoing radioactive iodine therapy for thyroid to improve their quality of life.

- **Future researches:**

- Replication of the study on a larger nonprobability representative sample to achieve more generalizable results.
- A study to investigate the impact of providing a protocol of care or developing a clinical pathway for patients with thyroid disorders who will receive radioactive iodine therapy and its influences on the outcomes.

## REFERENCES

- Abd-el Fattah, A.D. (2012). Impact of nursing educational program on patients' outcome among patients undergoing thyroidectomy at El-Manial University Hospital. Unpublished doctorate thesis, Faculty of Nursing, Cairo University. Egypt.
- Abd-el Mon'm, M. (2013). Hyperthyroidism management by RAI ablation. Available @ [www.masress.com](http://www.masress.com).**
- Abdoun, S. (2011). Egypt's illiteracy rate drops slightly to 26 percent. Daily News Egypt. Available @ [http:// www.zawya.com](http://www.zawya.com).
- Albin, J. & Davis, P. J. (2009). Hyperthyroidism in patients over the age of 60 years. Clinical features in 85 patients. *Medicine*; 53, 161–181.
- American Cancer Society (ACS). (2008). The annual prevalence of thyroid cancer. Available @ [www.thyroid.org](http://www.thyroid.org). Retrieved in Aug. 2011.
- American Cancer Society (ACS). (2012). The annual prevalence of thyroid cancer. Available @ [www.thyroid.org](http://www.thyroid.org). Retrieved in May. 2013.
- American National Institutes of Health (ANIH). (2012). Thyroid diseases annual statistics. Available @ [www.ANIH.org](http://www.ANIH.org)
- American Thyroid Association (ATA). (2009). 74th Annual meeting of the American Thyroid Association program and abstracts. California: VA Greater Los Angeles Healthcare System; 17. Available @ [http://www.thyroid.org/ann\\_mtg/2009\\_75th/documents/endowment\\_donors.pdf](http://www.thyroid.org/ann_mtg/2009_75th/documents/endowment_donors.pdf).
- American Thyroid Association (ATA). (2012). How to treat hyperthyroidism? Available @ [www.ATA.com](http://www.ATA.com).
- Anatomical diagram of the thyroid gland. (2012). Adopted from: [www.Medicalook.com](http://www.Medicalook.com).
- Andrade, V.A., Gross, J.L. & Maia, A.L. (2012). Effect of methimazole pre-

treatment on serum thyroid hormone levels after radioactive treatment in Graves' hyperthyroidism. *J Clin Endocrinol Metab*; 84, 4012–4016. @[www.JCEM.com](http://www.JCEM.com).

Archer, E. (2011). "[Thyroid Cancer](http://www.medicinenet.com/thyroid_cancer/article.htm)". Available @ [http://www.medicinenet.com/thyroid\\_cancer/article.htm](http://www.medicinenet.com/thyroid_cancer/article.htm). Retrieved on: 26 October 2011.

Aziz, N.M. & Rowland, J.H. (2003). Trends and advances in cancer survivorship research: Challenge and Opportunity. *Seminars in Radiation Oncology*. 2003; 13(3), 248–266. Available @ <http://www.ncbi.nlm.nih.gov/pubmed/12903014>.

Bahn, R.S. & Schwartz, K.M. (2012). Overactive thyroid gland; Hyperthyroidism. Available @ [www.mayoclinic.com/health/hyperthyroidism](http://www.mayoclinic.com/health/hyperthyroidism).

Bander, S.N. & Martin, C. (2012). Radioactive iodine efficacy in thyroid carcinoma. Available @ [www.thyroidcancer.org](http://www.thyroidcancer.org).

Barbara, S.M., Schuleller, W.B. & Kristin, C. (2010). Saul Hertz, MD (1905 - 1950) A Pioneer in the use of radioactive iodine. *Endocrine practice*; 16,4,713-715. Available @ [www.Endocrine Practice.com](http://www.Endocrine Practice.com).

Barbet, J., Campion, L., Kraeber-Bodere, F. & Chatal, J.F. (2009). Prognostic impact of serum calcitonin and carcinoembryonic antigen doubling-times in patients with medullary thyroid carcinoma. *Journal of Clinical Endocrinology & Metabolism* 90, 6077. Available @ [National Cancer Institute > Medullary Thyroid Cancer](http://www.National Cancer Institute > Medullary Thyroid Cancer) Last Modified: 12/22/2010.

Bartelmo, J.M. & Lockart, A. (2009). *Lippincott Textbook of pathophysiology*. USA: Lippincott Comp. p. 262.

- Baylis, J., Tucker, J.B., Carter, J., Clark, T., Dagg, L., Farrell, N., Morris, M. & Smith, C. (2011). Recommendations for nurses in the management of patients receiving radioiodine therapy. NZNO Cancer Nurses' Section, National Committee.  
Available @ [www.unboundmedicine.com/pdf](http://www.unboundmedicine.com/pdf).
- Beckers, C. (1997). Regulations and policies on radioiodine 131I therapy in Europe. *Thyroid*;7(2), 221–4.
- Brinkman, A. (2009). *Manual of Clinical Nursing Procedures*. (6<sup>th</sup> ed., P. 235-237). USA: Blackwell Publishing: Oxford Comp.
- British Code of Practice for the Protection of Nurses. (2011). The nursing assessment of patients before radioactive iodine therapy administration. Available @ [www.cancer.gov/NZNO\\_Cancer\\_Nurses\\_Section/pdf doc](http://www.cancer.gov/NZNO_Cancer_Nurses_Section/pdf_doc).
- Carr, D., Goudas, L., Lawrence, D., Pirl, W., Lau, J., DeVine, D., Kupelnick, B. & Miller, K. (2007). Management of cancer symptoms: Pain, depression, and fatigue. AHRQ Publication No. 02-E032. Rockville, MD: Agency for Healthcare Research and Quality; [accessed November, 2009]. Available @ <http://www.ahrq.gov/downloads/pub/evidence/pdf/cansymp/cansymp.pdf>.
- Camphausen, K.A. & Hoskins, W.J. (2008). New therapeutic approaches for metastatic thyroid carcinoma. *Lancet Oncology*;8, 148–156.
- Chow, S.M. (2006). Side effects of high-dose radioactive iodine for ablation or treatment of differentiated thyroid carcinoma. *Journal of Hong Kong College Radiology*; 8, 127-135. Available @ [www.google.com/search/pdf.doc](http://www.google.com/search/pdf.doc).
- Christopher, L.D. (2009). Management of thyroid cancer. In: Braverman, L.D. *Diseases of the Thyroid*. Totowa, NJ: Humana Press;2, 287.

Chul-Woung, K., Sang-Yi, L. & Ok-Ryun, M. (2007): Inequalities in cancer incidence and mortality across income groups and policy implications in South Korea. *Public health*, 122(3): 229-236.

Compton, S.R. & Karl, M. (2011). What are the side effects of radioactive iodine therapy? Available @[www.endocrineweb.com](http://www.endocrineweb.com).

Considine, R.V. (2010). *Endocrine Physiology*. (2<sup>nd</sup> ed., p. 582). USA: Davis Comp.

Cooper, R.S., David, S., Henry, B.B., Jeffrey, R.G., Carol, G.M., Irwin, K., Peter, L., Ross M., Victor, M.M., Scott, A.R., Douglas, S.R., Julie, A.S. & Marius, N.S. (2011). Hyperthyroidism and other causes of thyrotoxicosis: management guidelines of the American Thyroid Association and American Association of Clinical Endocrinologists. Available @ [www. American Thyroid Association.com](http://www.AmericanThyroidAssociation.com).

Davies, L. & Welch, H.G. (2006). Increasing incidence of thyroid cancer in the United States. Available @[http://www.Thyroid health.com](http://www.Thyroidhealth.com).Net.11/2010.

Deeptee, A. (2010). An overview of the management of papillary and follicular thyroid carcinoma. Available @ <http://www.buzzle.com/authors.asp?author=54093>. Retrieved on Feb. 2012.

Delit, C., Silver, S., Yohalem, S.B. & Segal, R.L. (2011). Thyroid disease and its management with radioactive iodine I-131. *JAMA*; 176, 262–267.

Doenges, M.E. & Moorhouse, M.F. (2003). Application of nursing process and nursing diagnosis. An interactive text for diagnostic reasoning. (4<sup>th</sup> ed., Pp. 13-15). Philadelphia,USA: F. A. Davis Company.

Edward, B.S., Abass, A. & Balon, H.R. (2011). society of nuclear

medicine procedure guideline for therapy of thyroid disease with iodine-131 (sodium iodide). Available @ [www.google.com/pdf](http://www.google.com/pdf).

Fischbach, F.T. (2011). A manual of laboratory & diagnostic tests. (5th ed. P. 432). USA: Lippincott Comp.

Fitzgerald, P.A. (2008). Clinical endocrinology. (1<sup>st</sup> ed., p. 135). USA: Jones Medical publications.

Fouad, H.A. (2011). Using RAI in thyroid diseases' diagnosis and treatment. Retrieved from: <http://www.tabebak.com>.

Franklyn, J.A. & Sheppard, M.C. (2010). Outcomes after the surgical treatment of hyperthyroidism. N Engl J Med; 338,712–718. Available @[www.NEJM.com/pdf](http://www.NEJM.com/pdf) doc. Retrieved on 5/2011.

Frantz, A., Ball, J.R., Keston, G. & Palmer, M. (2010). Cancer: Principles and Practice of Oncology. (8<sup>th</sup> ed., pp. 1663-1682). Philadelphia, Pa: Lippincott Williams & Wilkins.

Ghoraryed, I. (2009). Thyroidectomy: Frequently asked questions. Available @ [www.Thyroidcancer.com](http://www.Thyroidcancer.com).

Gilbert, W.H., Woloshin, S. & Schwartz, L.A. (2011). Overdiagnosed: Making People Sick in the Pursuit of Health. (pp. 61-34) Malaysia Beacon Press. Available @ [www.MedicineNet.com/thyroid/cancer](http://www.MedicineNet.com/thyroid/cancer) /[ISBN 0-8070-2200-4](http://www.ISBN.org). Retrieved on 26 October 2011.

Goldman, L. & Ausiello, D. (2009). Causes of common thyroid disorders. Available @ [www.mythyroid.com](http://www.mythyroid.com). Retrieved in June, 2010

Grant, E., Murray, S.A., Kendall, M., Boyd, K., Tilley, S. & Ryan, D. (2009). Thyroid issues and needs: perspectives from patients with advanced cancer and nonmalignant disease. A qualitative study. Division of Community Health

Sciences, University of Edinburgh, Edinburgh, UK. Liz.Grant. Available @[www.ed.ac.uk](http://www.ed.ac.uk).

Guyton, A.C & Hall, J.E. (2009). Textbook of medical physiology. (11<sup>th</sup> ed. P.920). USA: Elsevier Saunders Comp.

Hamilton, G. & Lawrencj, E. H. (2011). Recent clinical developments in the therapeutic application of radio-phosphorus and radio-iodine. J. Clin. Investigation; 21(624)55.

Hamilton, J.G., Soleym, H. & Eichorn, K. (2010): Deposition of radioactive iodine in human thyroid tissue. Univ. California Publ.,Pharmacol; 28 (1) 339-367.

Harralson, T., O'Hea, E.L., Cutillo, A., Dietzen, L., Grissom, G., Person, S. & Boudreaux, E.D. (2013). A randomized control trial to test a computerized psychosocial cancer assessment and referral program: Methods and research design. Contemporary Clinical Trials Magazine; 35,15-24. Available @[www.ScienceDirect.com](http://www.ScienceDirect.com).

Herbert-Ashton, M.J. & Clarkson, N.E. (2009) Quick Look Nursing: Pharmacology. (2<sup>nd</sup> ed. Pp. 418-423) USA: Jones and Bartlett Publishers, pp 418- 423.

Hershman.J.M. (2010). Management of endocrine disorders. (3<sup>rd</sup> ed., pp. 37-38). USA: Davis Comp.

Hertz, S. & Robert, S.A. (2010). Radioactive iodine and women fertility. Available @[www.mythyroid.com](http://www.mythyroid.com). retrieved in Oct. 2012.

Honeybone, K. (2010). Radioactive iodine therapy guidelines. Available @ [www.allnurses.com](http://www.allnurses.com). Retrieved on Jun. 2013.

Illustrated diagram of the sub-total thyroid surgery. (2011). Adopted from: [www.Mayoclinic.com](http://www.Mayoclinic.com)

International Commission on Radiation Protection. (2010). The handling, storage, use and disposal of unsealed radionuclides in hospitals and medical research establishments. Pergamon Press for the ICRP. Available @ [www.ICRP.org/ICRP publication no.25](http://www.ICRP.org/ICRP_publication_no.25).

Jayakumar, R.V. (2011). Clinical approach to thyroid disease. Available @ [www.JAPI.org/pdf doc](http://www.JAPI.org/pdf_doc). ©Supplement to JAPI January 2011.Vol. 59.

Jemal, A., Clegg, L.X., Ward, E., Ries, L.A.G., Wu, X., Jamison, P.M., Wingo, P.A., Howe, H.L., Anderson, R.N. & Edwards, B.K. (2004). Annual report to the nation on the status of cancer, 1975–2001, with a special feature regarding survival. *Cancer*; 101(1) 3–27. [[PubMed](#)]

Kaptein, E.M., Levenson, H., Siegel, M.E., Gadallah, M., Akmal, A. & Karch, A.M. (2009). Focus on nursing pharmacology. (4<sup>th</sup> ed. pp. 578-587). USA: Lippincott & Wolters Klumer Comp.

Kee, J.L. (2011), laboratory & diagnostic tests with nursing implications. (8<sup>th</sup> ed. P. 392). USA: Pearson Comp, p. 392.

knobf, M.T. (2009). Psychosocial responses in cancer survivors. *Seminars in Oncology Nursing*; 23(1), 71-83.

Kukulska, A., Krajewska, J., Roskosz, J., Handkiewicz-Junak, D., Jarzab, M., Paliczka, E., Puch, Z., Wygoda, Z., Gubała, E. & Jarzab, B. (2009). Optimization of <sup>131</sup>I ablation in patients with differentiated thyroid carcinoma: Comparison of early outcomes of treatment with 100 mCi versus 60 mCi. *Endocrinology Journal*; 57, 374-379 [Available @ www.pubmed.com](http://www.pubmed.com).

- Kuy, S.R., Roman, S.A., Desai, R. & Sosa, J.A. (2009). Outcomes following radioiodine for hyperthyroidism. *J Clin Endocrinol Metab*; 85, 3058– 3064. Thyroid and parathyroid surgery. *Arch Surg*; 144, 399–406. Available @ [www.thyroid.com](http://www.thyroid.com). Retrieved in 2011.
- Ladenson, P. & Kim, M. (2009). Thyroid cancer. In: Goldman, L., Ausiello, D. (2010). *Cecil Medicine*. 23rd ed. Philadelphia: Saunders Elsevier; chap 244.
- Lansford, C.D. (2010). Common thyroid diseases. Available @ [www.medscape.com](http://www.medscape.com). Retrieved in May 2012.
- Larson, G., Anderson, H.M. & Koslawy, S. (2009). Thyroid diseases and diagnoses. Available @ [www. Thyroidcancer.org](http://www.Thyroidcancer.org).
- Lee, S.L & Griffing, G.T. (2013). Hyperthyroidism treatment and management Available @ [www. Medscape.com](http://www.Medscape.com).
- Lee, S.L. & Mandel, S.J. (2009). Management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid*; 16, 109–142. Available @ [www.cancer.org](http://www.cancer.org).
- Lewis, B., Woolner, S., Mark, L., Lemmon, M., Oliver, H., Beahrs, K., Black, B.M. & Raymond, F. (2009). Occult papillary carcinoma of the thyroid gland. *Journal of Clinical Endocrinology & Metabolism*; 20 (1), 89-105.
- Llewellyn, C.D., McGurk, M. & Weinman, J. (2011). How satisfied are head and neck cancer (HNC) patients with the information they receive pre-treatment? Available @ <http://www.sciencedirect.com/science/article/pii/S1368837505003313>.
- Luster, M., Clarke, S.E., Dietlein, M., Lassmann, M., Lind, P. (2009). Radioactive iodine ablation. *Nuclear Medicine*; 35, 1941–1959. Available @ [www.Thyroid.org](http://www.Thyroid.org).

- Martini, F.H & Nath, J.L. (2011). Fundamentals of anatomy & physiology. (8<sup>th</sup> ed., pp. 620-622). USA: Pearson Company.
- Mazzaferri, E.L. (2010). **An overview of the management of papillary and follicular thyroid carcinoma.** Available @ **Thyroid Journal.com**; 9 (5), 421-7. Retrieved in May, 2011.
- McCowen, K.D., Adler, R.A., Ghaed, N., Verdon, T., Hofeldt, F.D. (2012). **Low dose radioiodide thyroid ablation in postsurgical patients with thyroid cancer.** **American Journal of Medicine**; 61, 52-8. Retrieved in August, 2012.
- Meulen, I.C., Leeuw, J.J., Gamel, C. & Hafsteinsdóttir, T.B. (2012). Educational intervention for patients with head and neck cancer in the discharge phase. Available @ <http://www.sciencedirect.com/science/article/pii/S1462388912000543>.
- Milas, K. & Rehan, K.M. (2008). Radioactive Iodine for Hyperthyroidism, the most common hyperthyroid treatment in the US. Available @ <http://www.Thyroid Med.com>. Retrieved in September, 2010.
- Milas, K. & Rehan, K.M. (2009). The UHN patient information sheet for radioactive iodine administration. The risks and benefits of radioactive iodine are reviewed in the benefits and risks of I-131 therapy in patients with well-differentiated thyroid cancer. *Thyroid*; 19(12), 1381-91. Available @ [http://www.mythyroid.com/documents/Radioactive iodine treatmentUHN.pdf](http://www.mythyroid.com/documents/Radioactive%20iodine%20treatmentUHN.pdf).
- Molassiotis, A., Brearley, S., Saunders, M., Craven, O., Wardley, A., Farrell, C., Swindell, R., Todd, C. & Luker, K. (2009). Effectiveness of a home care nursing program in the symptom management of patients with head and neck cancer: A randomized, controlled trial. *Journal of Clinical Oncology*; 27(36). 6191-8.

- Monahan, F.D., Sands, J.K., Nriehors, M., Marek, J.F. & Green-Nigro, C.J. (2010). Phipps' medical-surgical nursing: Health and illness perspectives. (8<sup>th</sup> ed., pp. 1765-1769). USA: Elsevier Comp.
- Nair, U.R. (2011). Textbook of medical-surgical nursing: Nursing care guidelines for thyroid patients. (p. 1221). USA: Jaypee Comp.
- National Comprehensive Cancer Network (NCCN). (2010). Guidelines in Oncology: Thyroid Cancer. Available @ [www.NCCN.org](http://www.NCCN.org).
- Ness, K.K., Mertens, A.C., Hudson, M.M., Wall, M.M., Leisenring, W.M., Oeffinger, K.C., Sklar, C.A., Robison, L.L. & Gurney, J.G. (2005). Limitations on physical performance and daily activities among long-term survivors of thyroid cancer. *Annals of Internal Medicine*; 143(9), 639–647.
- Nicks, H. & Jackson, A.L. (2010). Mortality after radioiodine therapy. Available @ <http://www.puzzle.com/health/author=27218>.
- Norman, J. (2013). Hyperthyroidism: Causes & treatment. Available @ [www.endocrineweb.com/conditions](http://www.endocrineweb.com/conditions).
- O'Brien, P.G & Dirksen, Sh.R. (2008). Medical surgical nursing clinical Companion. (7<sup>th</sup> ed., pp. 333-338). USA: Mosby Comp.
- Oeffinger, K.C. & Hudson, M.M. (2004). Long-term complications following childhood and adolescent cancer: Foundations for providing risk-based health care for survivors. *Cancer Journal for Clinicians*; 54(4), 208–236. Available @ [www.ncbi.nlm.gov/pubmed/15253918](http://www.ncbi.nlm.gov/pubmed/15253918).
- Oyen, W.J., Tennvall, J. & Bombardieri, E. (2009). Guidelines for radioiodine therapy of differentiated thyroid cancer. *Eur. Journal of endocrinology*; 23, 25-29.

- Pacini, F., Schlumberger, M., Harmer, C., Berg, G.G., Cohen, O., Duntas, L., Jamar, F., Jarzab, B., Limbert, E., Lind, P., Reiners, C., Sanchez, V., Franco, F., Smit, J. & Wiersinga, W. (2009). **Post-surgical use of radioiodine (131I) in patients with papillary and follicular thyroid cancer and the issue of remnant ablation: A consensus report.** Available @ [www.Eur. Journal of Endocrinology](http://www.Eur. Journal of Endocrinology); **153**, 651-9. Retrieved in 2011.
- Pazdur, R. & Wagman, L.D. (2009). *Cancer management: A multidisciplinary approach.* (11<sup>th</sup> ed. P. 35). USA: Cambridge University Press.
- Peters, H., Fischer, C., Bogner, U., Reiners, C. & Schleusener, H. (2010). Treatment of Graves' hyperthyroidism with radioiodine: Results of a prospective randomized study. *Thyroid*; 7, 247–251. Available @ [www.thyroid.com](http://www.thyroid.com). Retrieved in 2011.
- Pieper, S.M. (2006). Informational needs of patients with thyroid cancer prior to the hospitalization period. Available @
- Raju, S.M. & Chandra, Sh. (2010). *Short textbook of pharmacology for Nurses.* (4<sup>th</sup> ed., pp. 519-521). Philadelphia: Lippincott Williams & Wilkins.
- Ramont, R.P., Niedringhans, D.M. & Towle, M.A. (2013). *Comprehensive nursing care.* (2<sup>nd</sup> ed., pp. 1062-1063). USA: Pearson Comp.
- Richardson, F.J. (2005). Quality of life (QoL) of thyroid cancer patients. Available @ [www.endocrineweb.com](http://www.endocrineweb.com). Retrieved in Oct. 2012.
- Rolfes, Sh. R., Pinna, K. & Whitney, E. (2009). *Understanding normal and clinical nutrition.* (7<sup>th</sup> ed., p. 451). Australia: Thomson Wadsworth.
- Rooke, M. & Sparks, J.K. (2008). *Medical physiology.* (2<sup>nd</sup> ed., pp. 213-224). USA: Mosby comp.

- Rosenthal, M.S.** (2008). Patient misconceptions and ethical challenges in radioactive iodine scanning and therapy. *Journal of Nuclear Medicine Technology*; 34 (3), 143-150.
- Roskosz, J., Gawkowska-Suwińska, M., Turska, M., Puch, Z., Jurecka-Tuleja, B., Handkiewicz-Junak, D., Wygoda, Z. & Jarzab, B. (2010). **Early evaluation of treatment effectiveness using <sup>131</sup>I iodine radiotherapy in patients with differentiated thyroid cancer.** Available @ <http://www.thyroidresearchjournal.com>. Retrieved in June, 2013.
- Ross, D.S., Cooper, K. & Mulder, G.S. (2012). Iodine in the treatment of hyperthyroidism. Available @ [www.Uptodate.com/contents/iodine](http://www.Uptodate.com/contents/iodine). Retrieved in March 2013.
- Rothrock, J., Smith, D. & McEwen, D. (2012). *Alexandecr's: Care of the thyroid patients before surgery*. USA: Mosby Comp, p. 619.
- Rutten, L.J., Arora, N.K., Bakos, A.D., Aziz, N. & Rowland, J. (2007). Informational needs and sources of information among cancer patients: A systemic review of research. *Patient Educ. Counsel*; 57(3), 250-261.
- Saladin, K.S. (2011). *Human anatomy*. (3<sup>rd</sup> ed., p.335). USA: Lippincott Co.
- Sankha, R., Saha, D., Sujata, K. (2010). Recovery of radioactive iodine from alkaline solution of n-irradiated tellurium target using a tiny Dowex-1 column. *Applied Radiation and Isotopes*; 68(10), 1967. Available @ <http://www.dx.doi:10.1016/j.apradiso.2010.04.033>.
- Santos, R.B., Romaldini, J.H. & Ward, L.S. (2009). Propylthiouracil reduces the effectiveness of radioiodine treatment in hyperthyroid patients with Graves' disease. *Thyroid*; 14, 525–530. Available @ [www.thyroid.com](http://www.thyroid.com). Retrieved in 2011.

- Scanlon, V.C. & Sanders, T. (2009). *Essentials of Anatomy and Physiology*. (5<sup>th</sup> ed., p. 235). USA: Davis Comp.
- Schlumberger, M., Carlomagno, F., Baudin, E., Bidart, J.M. & Santoro, M. (2008). New therapeutic approaches to treat medullary thyroid carcinoma. *National Clinical Practice of Endocrinology & Metabolism*; 4 (1), 22–32. Available @ <http://dx.doi:10.1038/ncpendmet0717>. PMID 18084343.
- Schnell, Z.B., Leeuwen, A.M. & Kranpitz, T.R. (2010). *Davis's Comprehensive laboratory and diagnostic test-with nursing implications*. (4th ed., pp. 908-910). Canada: Davis Comp.
- Sebag, F. (2007). Quality of life changes and clinical outcomes in thyroid cancer patients undergoing radioiodine remnant ablation. Available @ [http://www.clinicalendocrine\(oxf\).com](http://www.clinicalendocrine(oxf).com) . retrieved on: 9/2010.
- Sellin, R., Lustig, R. & Lamont, J.P. (2011). Thyroid and parathyroid cancers. Available @ <http://www.cancernetwork.com/cancer/management11/capter05/articles>. Retrieved in Jun, 2012.
- Sherman, H. (2009). Advances in chemotherapy of differentiated epithelial and medullary thyroid cancers. *Journal of Clinical Endocrinology & Metabolism*; 94 (5), 1493–1499. Available @ <http://dx.doi:10.1210/jc.2008-0923>.
- Singer, P.A., Cooper, D.S., & Levy E.G. (2008). Treatment guidelines for patients with hyperthyroidism and hypothyroidism. Available @ <http://www.Standards of Care Committee, American Thyroid Association, JAMA.com>; 273, 808–812. Retrieved in 9/2010.
- Skense, M.J., Marinell, E. & Fluharty, K.B. (2011). Inpatient-radioiodine ablation. Available @ [www.Nursingcentral.com](http://www.Nursingcentral.com). Retrieved in Nov, 2012.
- Smeltzer, S.C. & Bare, B.G. (2008). *Brunner and Suddarth's textbook of medical-surgical nursing*. (6<sup>th</sup> ed., pp. 1341-1347). Philadelphia: J.B. Lippincott Co.

Smeltzer, S.C., & Bare, B.G. (2010). Brunner and Suddarth's textbook of medical-surgical nursing. (8<sup>th</sup> ed., pp. 1438-1456). Philadelphia: J.B. Lippincott Co.

Soley, G.A. & Miller, W. (2010). Radioactive iodine ablation. Available @ [www.thyroid.com](http://www.thyroid.com). Retrieved in Oct. 2011.

Taylor, V. & Francis, H. (2008). Endocrinology. Retrieved from: bookshelf | NCBJ | NLM | NIH Help | Contact Bookshelf.

Teknos, T.N. (2011). Thyroid cancer. The Journal of Clinical Endocrinology & Metabolism; 12 (33), 245-259. Retrieved in Nov. 2012.

Thadani, R. (2011). Hyperthyroidism; Causes and management. Available @ <http://www.buzzle.com/author=34995>.

Thyroid scan image. (2012). Adopted from: [www.thyroid.com](http://www.thyroid.com).

Thyroid system diagram. (2011). Adopted from: [www.lpi.oregonstate.edu](http://www.lpi.oregonstate.edu).

Topiwala, Sh. (2012). Thyroid cancer; National Comprehensive Cancer Network (NCCN), Guidelines in Oncology; Version 1. 2010. Updated 3/2012.

Tunbridge, W.M., Evered, D.C., Hall, R., Appleton, D., Brewis, M., Clark, F., Evans, J.G., Young, E., Bird, T. & Smith, P.A., (2011). The spectrum of thyroid disease in a community: The Wickham Survey. Clinical Endocrinology (Oxf); 7, 481-493.

Tuttle, M.R. & Douglas, R.S. (2012). Surgical treatment of differentiated thyroid cancer. Available @ [www.endocrineweb.com](http://www.endocrineweb.com).

- Vander, J.B., Gaston, E.A. & Dawber, T.R. (2011). The significance of nontoxic thyroid nodules. *Annual International Medicine*; 69, 537–540. Available @ [www.Endocrinology.com](http://www.Endocrinology.com).
- Volpe, R. (2012). *Advanced nursing care*. Available @[www.nursingcentral.com](http://www.nursingcentral.com). Retrieved in May, 2013.
- Walter, M.A., Briel, M., Bonnema, S.J., Connell, J. & Cooper, D.S. (2010). Effects of antithyroid drugs on radioiodine treatment: Systematic review and meta-analysis of randomized controlled trials. *BMJ*; 334- 514. Available @ [www.Endocrinology.com](http://www.Endocrinology.com). Retrieved in 2011.
- Weingold, A.B. (2009). Thyroid disease in pregnancy. *Clinical Obstetric & Gynecology*; 26, 801–809. Available @ [www.thyroid.org](http://www.thyroid.org) . Retrieved in 2012.
- White, L., Duncan, G. & Wendy, B. (2013). *Medical-surgical nursing, An integrated approach*. (3<sup>rd</sup> ed., pp. 608-611). USA: Delmar Cengage Comp.
- World Health Organization WHO. (2010). The annual statistics of the thyroid cancer prevalence by country. Available @[www.who.org](http://www.who.org).
- Williams, I., Ankrett, V.O. & Lazarus, J.H. (2010). Etiology of hyperthyroidism in Canada and Wales. *Journal of Epidemiology & Community Health*; 37, 245–248. Available @ [www.cancer.gov](http://www.cancer.gov).
- Wood, M.J. & Ross-Kerr, J.C. (2011). *Basic steps in planning nursing research: From question to proposal: The research design*. (7<sup>th</sup> ed., pp. 121-122). London: Jones and Bartlett’s publishers.
- Zhiyong, S. (2011). Nursing intervention to improve the quality of life of cancer patients. *Journal of Nursing*; 28(6), 57-59.

# Appendix A Tools of Data Collection

## 1- Interviewing Schedule Tool

### I - البيانات الأساسية للمريض:

- رقم المريض:

- تاريخ الاستبيان :

- تاريخ جرعة اليود المشع:

	1- السن :
ذكر <input type="checkbox"/> - انثى <input type="checkbox"/>	2- النوع :
اعزب <input type="checkbox"/> - متزوج <input type="checkbox"/> مطلق <input type="checkbox"/> - ارمل <input type="checkbox"/>	3- الحالة الاجتماعية:
لا يقرأ أو يكتب <input type="checkbox"/> - يقرأ ويكتب <input type="checkbox"/> ابتدائي <input type="checkbox"/> - اعدادى <input type="checkbox"/> ثانوى <input type="checkbox"/> - جامعى <input type="checkbox"/> دراسات عليا <input type="checkbox"/>	4- المؤهل الدراسي:
1- يعمل <input type="checkbox"/> - لا يعمل <input type="checkbox"/> 1.أ - موظف <input type="checkbox"/> 1.ب - عمل يدوى <input type="checkbox"/> 1.ج - اعمال حرة <input type="checkbox"/>	5- المهنة او الوظيفة:
ريف <input type="checkbox"/> - مدينة <input type="checkbox"/> المحافظة:	6- محل الإقامة:
لا يدخن <input type="checkbox"/> - يدخن <input type="checkbox"/> المدة:.....	7- التدخين:
علاج دوائى <input type="checkbox"/> - جراحى <input type="checkbox"/>	8- العلاج المستخدم سابقا للغدة الدرقية :
..... ..... ..... ..... .....	9- تاريخ المرض الحالى:

## استمارة تقييم معرفة المريض عن العلاج ( عقار اليود المشع) II

\*\* عزيزى السيد/ السيدة

هذه الاستمارة صممت بواسطة الباحثة من اجل تقييم مدى معرفتكم عن عقار اليود المشع والذي سوف تتلقاه لعلاج حالتكم المرضية. والتي اعدت بناءا على الاسئلة التى تتكرر كثيرا من المرضى المماثلين لكم. وهى تتكون من ثلاث اجزاء:

أولاً: اسئلة عن فترة ما قبل تلقى اليود المشع.

ثانياً: اسئلة عن فترة التواجد بالمستشفى بعد أخذ الجرعة.

ثالثاً: اسئلة عن فترة مابعد العلاج بالمنزل.

وعليك ان تتأكد/تتأكدى أنه من حقك أن تجيب على ما ترغب من الاسئلة وان كان من الافضل الاجابة على جميع الاسئلة.

أولاً: اسئلة عن فترة ما قبل تلقى اليود المشع.

1-1 هل كنت تعرف طرق العلاج المستخدمة لعلاج امراض الغدة الدرقية؟

□ نعم □ لا

2-1 هل تلقيت هذا العلاج من قبل ؟

□ نعم □ لا

3-1 هل هناك تحضيرات معينة للمريض قبل تلقى جرعة اليود المشع؟

□ نعم □ لا

4-1 هل تعرف المدة اللازمة لابقاف اخذ اى علاج قبل العلاج باليود المشع؟

□ نعم □ لا

5-1 هل تعرف المدة اللازمة لتناول غذاء قليل اليود قبل الحضور للعلاج باليود المشع؟

□ نعم □ لا

1-6 للسيدات المتزوجات، هل تعلمين انه يجب عليكى منع او تأجيل الحمل بعد العلاج؟

□ نعم □ لا

7-1 للرجال، هل تعرف انه قد يحدث فقدان مؤقت (لخصوصية لمدة سنة بعد العلاج؟

□ نعم □ لا

8-1 هل قمت بايقاف اخذ علاج الغدة الدرقية قبل الحضور للعلاج باليود المشع؟

□ نعم □ لا

9-1 هل قمت بأى تغيير فى غذائك قبل الحضور للعلاج باليود المشع؟

□ نعم □ لا

10-1 للسيدات المتزوجات، هل قمتى بعمل اختبار حمل قبل الحضور للعلاج باليود المشع للتأكد من عدم وجود حمل؟

□ نعم □ لا

11-1 للمدخنين، هل قمت بايقاف التدخين قبل الحضور للعلاج باليود المشع؟

□ نعم □ لا

12-1 طريقة اخذ اليود المشع:

□ عن طريق الفم □ عن طريق الحقن

ثانيا: اسئلة عن فترة التواجد بالمستشفى بعد أخذ الجرعة.

1-2 هل تعرف ان هناك فترة عزل بعد اخذ جرعة اليود المشع؟

□ نعم □ لا

2-2 مدة العزل بالمستشفى:

□ يوم واحد □ يومين □ أكثر من اربع ايام

3-2 الانشطة الممنوعة اثناء فترة العزل كل ما يلى:

□ المشاركة فى الطعام □ التقبيل والاحضان

□ المعاشرة الزوجية □ النوم

2-4 اثناء التواجد بالمستشفى بعد العلاج يفضل ارتداء:

- الملابس الشخصية  جاون المستشفى

**ثالثا: اسئلة عن فترة ما بعد العلاج بالمنزل**

3-1 مدة العزل بالمنزل عقب الخروج من المستشفى:

- ثلاث ايام  اسبوع واحد  اسبوعين

3-2 هل تعرف متى تستطيع الرجوع الى عملك بصورة منتظمة؟

- نعم  لا

3-3 هل يجوز السفر الى اى مكان بعد العلاج مباشرة؟

- نعم  لا  لا اعرف

3-4 اذا كنت مضطرا للسفر فهل هناك احتياطات يجب الالتزام بها؟

- نعم  لا  لا اعرف

3-5 هل تعرف الاعراض الطارئة التى تستوجب العودة الى المستشفى؟

- نعم  لا

3-6 هل تعرف مواعيد المتابعة بالمستشفى؟

- نعم  لا

3-7 هل هناك اعراض جانبية للعلاج باليود المشع؟

- نعم  لا

3-8 هل تعرف كيفية التغلب على الاعراض الجانبية لليود المشع؟

- نعم  لا

3-9 هل تعرف الاحتياطات اللازم اتباعها بعد الخروج من المستشفى؟

- نعم  لا

10-3 هل تعرف المسافة المحددة للتعامل مع الاخرين فى المنزل؟

نعم  لا

11-3 هل تعرف انه يجب عليك النوم فى حجرة منفصلة فى المنزل؟

نعم  لا

12-3 فى المنزل، يتم التعامل مع الملابس الشخصية، ملايات السرير و البطاطين عن طريق:

التخلص منها فوراً  الغسيل بالطريقة العادية

الغسيل الجيد بصورة منفردة

13-3 هل هناك اى احتياطات يجب اتخاذها عند التعامل مع افرازات الجسم مثل ( العرق ، البول و البراز)؟

نعم  لا

14-3 هل تعرف ان عليك ان تشرب كميات كبيرة من المياه والسوائل فى الايام الاولى بعد العلاج؟

نعم  لا

15-3 هل تعرف ان عليك الاكثار من الاستحمام بعد اخذ العلاج:

نعم  لا  لا اعرف

16-3 هل تعرف ان عليك غسل الحمام (التواليت) بصورة جيدة بعد كل استخدام:

نعم  لا  لا اعرف

17-3 هل تعرف ان عليك تناول الطعام بصورة منفردة؟

نعم  لا

18-3 كيف تتعامل مع ادوات الطعام مثل ( الاطباق- الملاعق- الاكواب)؟

بالغسيل بالطريقة العادية  بالتخلص منها فوراً

بالغسيل الجيد بصورة منفردة

19-3 ضع علامة (√) امام الاعراض الجانبية لليود المشع من خلال خبرتك :

لا اعرف	لا	نعم	الاثار الجانبى او الشكوى
			- صداع ودوخة.
			- الم فى الرقبة.
			- اسهال .
			- مغص و غثبان.
			- امساك.
			- تغيير فى لون البول.
			- حرقان فى البول.
			- التهاب فى الغدد اللعابية.
			- تقليل حاسة التذوق او تغيير طعم الطعام.
			- جفاف الحلق .
			- اعراض نقص افراز الغدة الدرقية مثل ( الاجهاد، زيادة الوزن، سقوط الشعر و جفاف الجلد)
			- جفاف العين .

### III-Radio-active iodine Patient's needs and problems assessment tool

#### استمارة تقييم الاحتياجات والمشكلات للمرضى المعالجين باليود المشع

- رقم المريض: .....

- تاريخ الاستبيان : .....

- تاريخ اخذ جرعة اليود المشع: .....

**\*\* عزيزى السيد/ السيدة**

هذه الاستمارة صممت بواسطة الباحثة من اجل تقييم الاحتياجات والمشكلات التى قد تتعرضون لها اثناء وبعد العلاج بعقار اليود المشع والذى سوف تتلقاه لعلاج حالتكم المرضية. وهى تحتوى على مجموعة متعددة من الاحتياجات/المشكلات الجسدية، النفسية، الاجتماعية، المادية، الروحانية والمعرفية التى تتعلق بحالتكم الصحية والتى تم الاستدلال عنها من المرضى السابقين المماثلين لكم.

و عليك ان تتأكد/تتأكدى أنه من حقك أن تجيب على ما ترغب من الاسئلة وان كان من الافضل الاجابة على جميع الاسئلة.

هل تحتاج تدخل (مساعدة) لهذه المشكلة ؟			هل تعتبر مشكلة بالنسبة لك؟			الاحتياج / المشكلة :
لا	نعم بشدة	حاليا	لا	الى حد ما	نعم	
						<p><b>** النواحي الجسدية</b></p> <p><b>الحركة (Mobility):</b></p> <p>1- صعوبة فى المشى.</p> <p>2- صعوبة فى القيام</p> <p>3- صعوبة فى دخول الحمام.</p> <p>4- صعوبة فى صعود السلالم.</p> <p>5- صعوبات فى الانتقال ( المواصلات العامة، قيادة السيارة، قيادة الدراجة)</p> <p>6- صعوبات فى التسوق ( الطعام، الملابس،.....)</p> <p><b>الانشطة اليومية (Activities of Daily Living):</b></p> <p>1- صعوبة فى الاعتناء بالجسم.</p> <p>2- صعوبة فى الملابس.</p> <p>3- صعوبة فى تناول الطعام</p> <p>4- صعوبة فى اعداد الطعام.</p> <p>5- صعوبات فى الاعمال المنزلية البسيطة مثل ترتيب المنزل.</p> <p>6- صعوبات فى الاعمال المنزلية الاصعب مثل ( التنظيف، الاعتناء بالاسرة، الاعتناء بالحديقة،.....)</p>

هل تحتاج تدخل (مساعدة) لهذه المشكلة؟			هل تعتبر مشكلة بالنسبة لك؟			الاحتياج / المشكلة :			
لا	حاليا	نعم بشدة	لا	الى حد ما	نعم				
						<p><b>اعراض عدم الارتياح، وظائف الامعاء و المثانة:</b>  <b>(Discomfort, Bowel &amp; Bladder function) :</b></p> <ol style="list-style-type: none"> <li>1- الالم.</li> <li>2- قلة التركيز.</li> <li>3- تعب واجهاد.</li> <li>4- مشاكل بالنوم.</li> <li>5- غثيان او قيء.</li> <li>6- امساك او اسهال.</li> <li>7- السلس البولى ( عدم التحكم فى التبول)</li> <li>8- مشاكل بالفم او البلع.</li> <li>9- فقدان الشهية او تغير فى المذاق.</li> <li>10- ضيق فى التنفس.</li> <li>11- كحة.</li> <li>12- هرش.</li> <li>13- سقوط الشعر.</li> <li>14- ضعف النظر او السمع.</li> <li>15- ضعف القدرة الجنسية.</li> <li>16- الاحساس بالتنميل او الشكشكة بالاطراف.</li> <li>17- تورم باليدين او القدمين.</li> <li>18- عرق او احساس بالسخونة (باليل).</li> </ol> <p><b>** <u>الانشطة الشخصية (Role) Personal Activities</u> :</b></p> <ol style="list-style-type: none"> <li>1- صعوبة فى القيام بالمهام اليومية.</li> <li>2- صعوبة فى الاسترخاء.</li> <li>3- صعوبات فى الاعمال المهنية ( العمل) او الدراسة.</li> <li>4- صعوبات فى الاهتمام بالاطفال ورعايتهم.</li> </ol>			

						<p align="center"><b>** النواحي المادية والاداري:</b>  <b>Financial and Administrative Issues</b></p> <p>1- زيادة المصروفات نتيجة المرض.  2- قلة الدخل نتيجة المرض.  3- صعوبات فى اشراك العائلة فى الترتيبات المادية والادارية.  4- صعوبات فى توفير التأمين الصحى.</p>					
هل تحتاج تدخل (مساعدة) لهذه المشكلة؟			هل تعتبر مشكلة بالنسبة لك؟			الاحتياج / المشكلة :					
لا	حاليا	نعم بشدة	لا	الى حد ما	نعم						
						<p align="center"><b>** النواحي الاجتماعية (Social Issues):</b></p> <p>1- وجود مشاكل فى العلاقة الجنسية مع الزوج / الزوجة.  2- صعوبة التحدث مع الزوج / الزوجة عن المرض.  3- وجود مشاكل فى التواصل مع الاولاد.  4- وجود مشاكل فى التواصل مع العائلة، الاصدقاء، الجيران، الزملاء.  5- وجود صعوبة فى التحدث عن المرض مع الاخرين للاخراج.  6- اختلاف الاراء حول طرق العلاج المستخدمة.  7- الاحساس بعدم وجود مساندة من الآخرين.  8- صعوبة وجود شخص موثوق فيه للتحدث عن المرض.  9- عدم وجود رعاية كافية من الزوج / الزوجة او العائلة.  10- الاخرين مشغولين جدا بحالتى الصحية.  11- الاخرين مهمومين جدا بحالتى الصحية.  12- الاخرين ينكرون ( لا يشعرون ) بخطورة حالتى.  13- الشعور بالوحدة.  14- اشعر بالتجاهل ممن حولى.</p>					
						<p align="center"><b>** النواحي النفسية (The Psychological Issues):</b></p> <p align="center"><b>الاكتئاب (Depression)</b></p> <p>1- الشعور بالاحباط.  2- لم اعد اشعر بالسعادة او الفرحة.</p> <p align="center"><b>القلق والخوف (Anxiety)</b></p> <p>1- الخوف من المعاناة الجسمانية.  2- الخوف من العلاج.  3- الخوف من انتشار المرض.</p>					

						4- الخوف من الوحدة. 5- الخوف من الموت.
<b>الموقف تجاه المرض (Attitude toward disease)</b>						
1- صعوبة التأقلم مع التغييرات المستقبلية. 2- صعوبة التعبير عن مشاعري امام الاخرين. 3- الشعور بالذنب. 4- الشعور بالخزي او الخجل. 5- اشعر بعدم القدرة على عدم التحكم في مشاعري.						
<b>هل تحتاج تدخل (مساعدة) لهذه المشكلة؟</b>			<b>هل تعتبر مشكلة بالنسبة لك؟</b>			<b>الاحتياج / المشكلة :</b>
لا	حاليا	نعم بشدة	لا	الى حد ما	نعم	
						6- صعوبة تقبل اى تغير فى مظهرى الجسمانى. 7- صعوبة رؤية النواحي الايجابية للعلاج. - الانشغال الدائم بأى قرارات يجب اتخاذها. 8 <b>**التحكم بالذات <u>Autonomy</u></b> 1- وجود صعوبة فى استمرارى فى الانشطة/الاعمال المعتادة. 2- وجود صعوبة فى استمرارى فى الانشطة الاجتماعية. 3- وجود صعوبة فى مساعدة الاخرين. 4- اصبحت معتمد على الاخرين. 5- الشعور بالاحباط لعدم قدرتى على العمل كالماضى. 6- الشعور بفقدان القدرة على التحكم على جسمى. 7- الشعور بفقدان القدرة على التحكم فى حياتى. 8- صعوبة طلب المساعدة من الاخرين. 9- صعوبة اتخاذ القرارات الشخصية.  <b>** النواحي الروحية <u>The spiritual issues</u></b> 1- صعوبة تقبل المرض. 2- اشعر بصعوبة فى ان اكون متاح للاخرين ( مساعدتهم ). 3- اشعر بصعوبة فى الحفاظ على علاقتى بالله ( الامور الدينية ) 4- صعوبة التفكير او تقبل فكرة الموت. 5- اشعر بعدم وجود اهمية لى.

لا	نعم	<b><u>The informational needs</u> **الاحتياجات المعرفية</b>
		<p>1- احتج معلومات عن الاماكن / المنشآت التي تستطيع مساعدتى.  2- احتج معلومات عن اسباب المرض.  3- احتج معلومات عن الاعراض الجسدية المحتمله فى حالتى.  4- احتج معلومات عن انواع العلاج المناسب لى.  5- احتج معلومات عن الاعراض الجانبية للعلاج.  6- احتج معلومات عن التغذية المناسبة لى.  7- احتج معلومات عن القدرة الجنسية بعد تناول العلاج.  8- احتج معلومات عن كيفية التغلب على الاعراض الجانبية للعلاج.  9- احتج معلومات عن كيفية متابعة حالتى بالمنزل بعد الخروج من المستشفى.  10- احتج معلومات عن كيفية التعامل مع من حولى مثل(الزوج/ الزوجة – الاطفال – باقى الاسرة – زملائى بالعمل)</p>



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