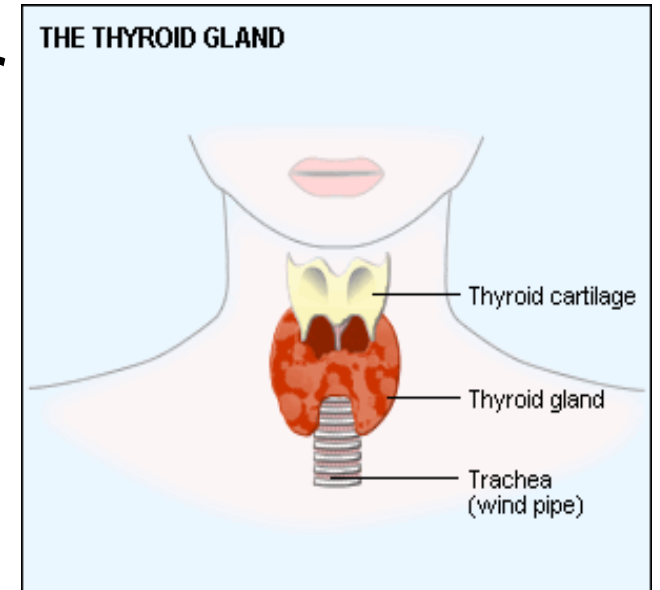




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Iodine Deficiency Disorder (IDD)



*Iodine is an essential •
constituent of the thyroid hormones. The •
major role of iodine in nutrition arises from
the importance of thyroid hormones to
stimulate cell oxidation and play a major role
in regulating the basal metabolic rate of the
adult ,And the growth and development of
children .

*The total amount of iodine in the body of an average adult 20-50mg distributed as Follows •
:- Muscle 10%,skin 10%,skeletal structure 7%,thyroid 65% , and the remaining is scattered in other endocrine organs and the central nervous system.

*The concentration of iodine in the thyroid gland •
is more than 100times that in the muscle and 10.000 times that in the blood.

* Iodine deficiency is the world's most significant cause of preventable brain damage and mental retardation. The effect of iodine deficiency on a country's population has a negative impact on the entire economy of affected nations. •

Globally, 2.2 billion people (38% of world's population) live in area with iodine deficiency & risks of its complications. (20-30 % sign).

Needed of iodine are higher:

During growth of infant, children and adolescents & during pregnancy and lactation. •

Food sources:-



vegetable Products are low in iodine
(because the iodine content of a •
given plant food depends on the type of soil •
and soil usually contain little of this element).
Sea water contains iodine, sea food which is •
the only rich source of iodine.



- Fresh water fish: 20 – 40 Mg/Kg Iodine
- Salt water fish: 300 – 3000 Mg/Kg Iodine
- The amount of iodine in dairy products, meat, and egg is generally good, but depend on the composition of animal feed.

Iodine is readily absorbed, and excess intake is controlled by renal excretion
Absorption is usually complete but may be delayed in Protein –energy malnutrition.



Iodine requirement •

- Infant 1st 12 months of age 50 microgram •
- Children 2-6 years of age90 microgram •
- School age children120 microgram •
- Adults more than 12 years150 microgram •
- Pregnant & Lactating200 microgram •

Minimum amount of iodine required to •
replace the turnover of thyroid hormones is
50 microgram/day. iodine deficiency occurs
when iodine intake fall below the
recommended levels The usual
recommended level for the population mean
intake of iodine is 100-150 Mg/day ,This level
is adequate to maintain the normal thyroid
function that is essential for normal growth
and development . In the presence of
goitrogens in the diet, the intake should be
increased to 200-300 Mg/day

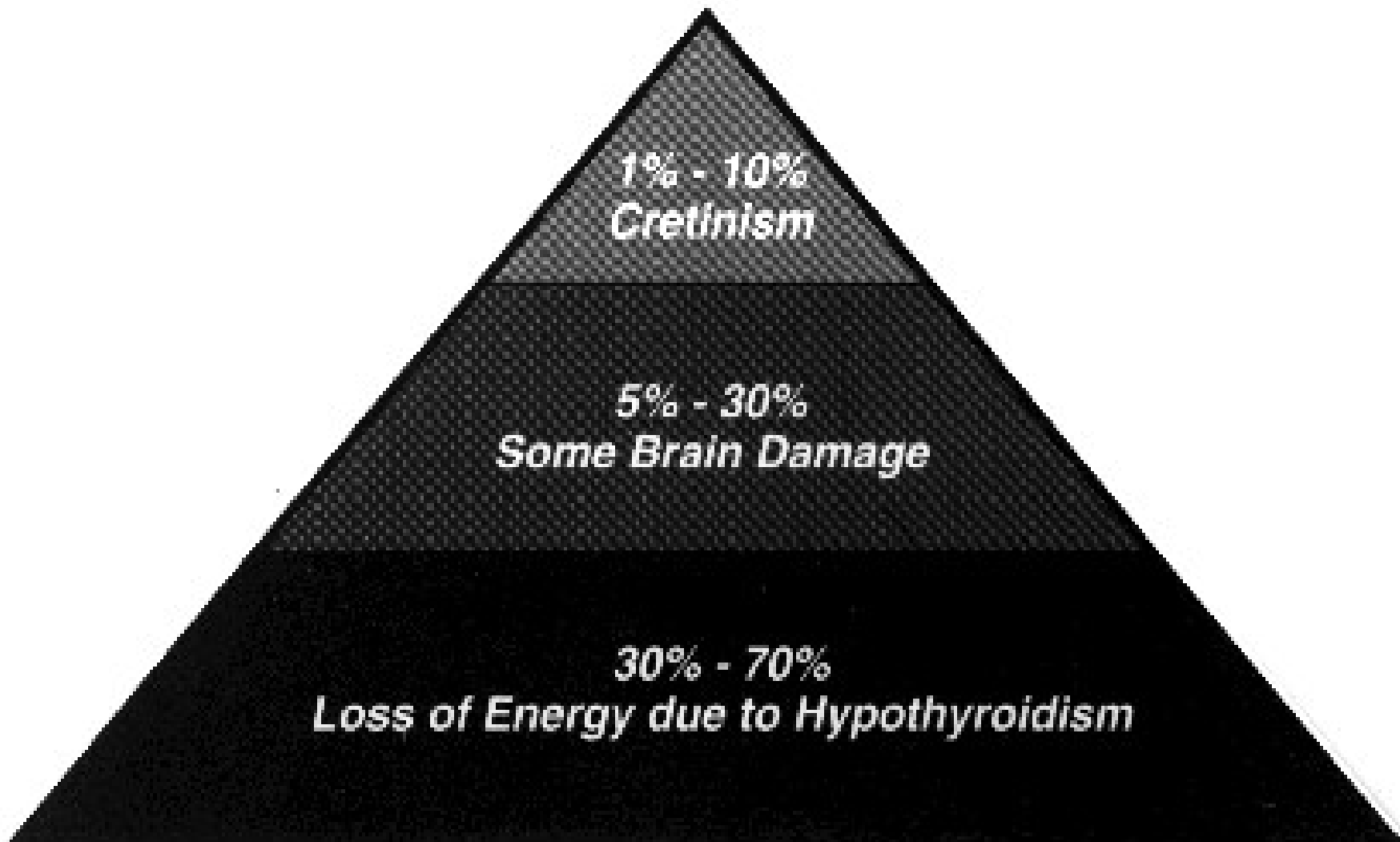
Function of iodine

- 1-It is an integral part of thyroid hormones • that play a major role in regulating growth and development, also have important role in regulation of metabolic rate.
- 2-It is required for early development of • nervous system during fetal life
- 3-It is needed for normal reproductive • function.

Causes of IDD:

- 1- Lack of iodine in the diet. Because iodine can not be stored for long times in the body, tiny amount must be consumed regularly, but food grown in iodine poor soil will not provide sufficient dietary iodine. •
- 2-Increased requirement: Developing fetus, newborn, young child, adolescents especially in females, pregnant and lactating women •
- 3-Intake of goitrogens: substances occur naturally in food, that acts by blocking absorption, utilization of iodine. •
- 4-Deficiency of enzymes need in the metabolism of iodine. •

The spectrum of iodine deficiency disorder:



Fetus •

Abortion and still birth, congenital •
anomalies, increased perinatal mortality

Increased infant mortality & psychomotor •
defects.

-Neonate: •

Neonatal goiter, Neonatal hypothyroidism •
& increased susceptibility to nuclear radiation.

-Child and adolescent •

Goiter & Juvenile hypothyroidism, Impaired •
mental function, Retarded physical development

Adult •

Goiter with its complications, hypothyroidism, •
impaired mental function.

Iodine-induced hyperthyroidism •

Society •

Lower productivity and higher demand on social •
services. .

Goiter



Deficiency of iodine •
in diet causes the thyroid gland to enlarge •
due to its desperate effort to produce the
hormones; this enlargement is known as
goiter.

The damage done by this lack of thyroid •
hormone varies in severity depending on the
time of life at which the deficiency occurs



. Goiters vary in size from those that you can only feel to those that you can easily see .Goiter often start in childhood and gradually enlarge, particularly during puberty. •

A goiter often gets bigger during pregnancy and lactation because the body needs more thyroid hormone at that time, it may continue to increase in size with each new pregnancy . •

Large goiters are ugly and uncomfortable •
.Some time the swelling *presses* on the trachea and causes difficulty breathing .It may press on the esophagus and cause difficulty swallowing.

It may press on blood vessels and interfere •
with the flow of blood. Surgery may be the only useful treatment when this happens

Goitrogens

Goitrogens are substances that suppress the function of the thyroid gland by interfering with iodine uptake, which can, as a result, cause an enlargement of the thyroid (a goitre).

:Chemicals that have been shown to have goitrogenic effects are

- Lithium inhibits thyroid hormone release.
- Phenobarbitone, phenytoin, carbamazepine, rifampin induce metabolic degradation of T3 and T4. , Amiodarone , Sulfadimethoxine. •



Food containing goitrogens include: •
cassava, maize, bamboo shoots, sweet •
potatoes, Lima beans and millets, cauliflower,
beetroot, peaches, spinach, Brussels sprout,
Soya beans, pears.

Hypothyroidism:

Hypothyroidism usually result from a •
dysfunction of the thyroid gland , which may
be due to surgery , irradiation therapy ,
chronic autoimmune thyroiditis (hashimoto's
disease), or inflammatory conditions
Such as amyloidosis and sarcoidosis. •

Beside an enlarged thyroid, signs and symptoms include: Feels cold easily , Moves slowly and lacks energy, Thinks slowly and appears unconcentrated (apathy) ,May be sleepy , Has a dry skin &May be constipated .

A child who is hypothyroid also:- •

*Grows slowly, and may be very short. •

*May not do well in school. •

These problems all improve if you give the person iodine. •

Woman who is hypothyroid during pregnancy •
may also have: Miscarriages
*or stillbirth.

*Low birth weight babies. •

*Babies with congenital deformities. •

*Babies borne to hypothyroid mother may •
have cretinism.

You can prevent these effects if you give •
iodine to woman before pregnancy.

Cretinism: •

There are two types of cretinism – neurological and hypothyroid. •
Some people show sign of both types.

Which type is commonest vary from area to area. •

Neurological cretinism: •

Baby has damage to the brain and nervous system. Effects vary •
from those that are mild and difficult to severe mental and
physical handicap. The effects may include

Deafness and mutes (the child cannot speak), squint (the eyes •
are not held straight), weakness and stiffness especially of the
legs, severe mental handicap.

Neurological cretinism is likely if the mother is Iodine deficient in •
the early part of pregnancy, when baby's brain and nervous
system are developing

Neurological cretinism cannot be treated , Giving Iodine does not •
help.

The child remains handicapped through out life; and may die •
young .you can, however prevent neurological cretinism if you
give iodine before conception.

The baby has signs which are similar to those •
listed under “hypothyroidism

Hypothyroid cretinism is likely if the mother •
is iodine deficient in later pregnancy.

Breastfeeding may partly protect the baby
and effects of iodine deficiency may become
worse after weaning.



If you give the baby iodine, the sign may •
improve or disappear. The earlier the baby
gets iodine, the better the result.

Treatment may not be effective if it is started •
after a child is about 1 or 2 years old.

So it is important to try to find and treat •
hypothyroid babies as early as possible

Prevention & control of IDD:

1-iodization of either salt or oil or both •

•

*Iodized Salt: first choice for intervention. •

Salt is the most universally available food item, which everyone, everywhere consumes daily. Most people in the world consume 5-10 grams of salt per day •

The amount of iodine which has to be added to the salt is 30-50 micrograms of iodine per gram of salt. These minute quantities of iodine do not in any way alter the taste or color of the salt. Consumption of iodized salt immediately has a positive effect on brain development, and it improves the health situation of the population with IDD. Iodized salt is not harmful for people who already consume enough iodine. The technical process for adding iodine to salt very simple. •



*Iodized oil:

Iodized oil can be used as a treatment for the prompt correction of hypothyroid due to its high iodine content .it usually contain 480mg iodine in 1 ml of oil

Iodized oil can be given orally, or by injection.

Use of iodized oil has shown many positive effects in iodine deficient

Populations.

Iodized oil may successfully be given to pregnant woman in the first month of pregnancy since brain development of the fetus takes place during this period of pregnancy.

Injected iodized oil (1ml=480 mg of iodine) can •
be found in the body for 3-5 years and iodized
oil taken orally (with the same does) can remain
in the body for about 1-2 year.

DOSE: •

Iodized oil by mouth: the dose for all ages is 1 ml •
of iodized oil.

Iodized oil by injection: the does for people aged •
1-45 years 1ml, if baby under 1 year of age who
is not breast feeding is 0.5ml, older and nodular
goiter is 0.2ml.

For small children inject the into the buttock or thigh. •

For older children & adult, inject into upper arm. •

2- Iodization of water supply: applied in remote (far) villages where the distribution of iodized salt & iodide injection are impractical. •

3- by improvement of socioeconomic state & health education about IDD. •

4- Good medical service & health care for early diagnosis & treatment of hypothyroidism especially in childbearing females. •

الإبتسامة



نصف الصحة..

