

Time	Narration
00:00	Welcome to the spoken tutorial on type 1 and type 2 nutrients.
00:06	This tutorial is about the difference between type 1 and type 2 nutrients.
00:12	Let us begin.
00:14	Food gives us energy and nutrients.
00:17	Nutrients are necessary for the growth and maintenance of our body.
00:22	Some of these nutrients cannot be produced by our body.
00:27	Such nutrients are called essential nutrients.
00:31	There are 40 essential nutrients that we must obtain from food.
00:36	We cannot get adequate amounts of these nutrients from nutrient-poor foods.
00:42	Such foods, even in large amounts, can satisfy only the feeling of hunger.
00:48	However, we can be deficient in one or more of the essential nutrients.
00:54	This is known as hidden hunger.
00:58	Essential nutrients are divided into 2 types:
01:02	Type 1 nutrients or functional nutrients
01:05	and Type 2 nutrients or growth nutrients.
01:09	Iron, calcium,
01:11	iodine and copper are type 1 nutrients.
01:15	Manganese,
01:17	fluorine and selenium also belong to the same group.
01:21	Vitamin B, C,
01:23	A, D,
01:25	E and K are type 1 nutrients as well.
01:29	Sulphur, chlorine and

01:32	protein or essential amino acids are type 2 nutrients.
01:37	Sodium , potassium,
01:39	magnesium, phosphorus
01:41	and zinc also belong to the same group.
01:45	Essential fatty acids like omega 3 are type 2 nutrients as well.
01:51	Let's understand the difference between type 1 and type 2 nutrients.
01:56	Type 1 nutrients are required for specific functions in the tissues.
02:02	Therefore, they are concentrated in a particular tissue or group of tissues.
02:08	Let's take calcium and vitamin A as examples.
02:13	Calcium is required for strong bones.
02:17	Vitamin A is required for healthy eyes.
02:21	By contrast, type 2 nutrients are required for the overall growth of the body.
02:28	They form part of the structure and function of each and every cell in the body.
02:34	Therefore, they are present in all body tissues
02:38	Let's discuss the response of our body to type 1 and 2 nutrient deficiencies.
02:45	During a type 1 nutrient deficiency, the body continues to grow normally.
02:50	Body takes this nutrient from the specific tissues in which it is stored.
02:57	Let's take calcium as an example.
03:00	In calcium deficiency, the body uses the calcium stored in the bones.
03:07	As a result, the concentration of that nutrient in the tissues decreases.
03:13	Then, the organs dependant on that nutrient are affected.
03:18	Therefore, the person becomes ill.
03:21	The sick person then shows a specific sign of deficiency.
03:26	Let's understand this with the help of 4 examples:
03:31	1. Bone-thinning and increased risk of fractures are signs of calcium deficiency.
03:37	2. Anaemia is a sign of iron deficiency.
03:41	3. Night blindness is a sign of vitamin A deficiency.
03:45	4. And Hypothyroidism is a sign of iodine deficiency.
03:50	On the other hand, there is only 1 sign of type 2 nutrient deficiencies.
03:57	That sign is called growth failure.
04:00	Growth failure means the body reduces the rate of 2 major processes:
04:06	1. Formation of new cells and
04:09	2. Replacement of old cells.
04:11	The body stops growing and making new tissues.
04:16	This leads to low body weight,
04:18	short height

	and decreased muscle mass.
04:23	All the cells of the body, including the immune system, are affected.
04:29	This increases the risk of infections.
04:32	Eventually, it can cause death.
04:35	Type 2 nutrients are not stored in the body.
04:39	In a deficiency, the body may start to break down its tissues or muscles.
04:45	This releases the type 2 nutrient in which the body is deficient.
04:50	This nutrient will then be used for other tissues of the body.
04:56	When tissue breakdown becomes severe, the functions of the cells are affected.
05:02	Also, there is a reduction in the appetite.
05:05	The tissue breakdown provides the nutrient in which the body is deficient.
05:11	However, it also releases all the other type 2 nutrients from the tissues.
05:17	These nutrients are then excreted from the body.
05:21	So, all type 2 nutrients must be provided in a type 2 nutrient deficiency.
05:28	Correcting a type 1 nutrient deficiency does not require all type 1 nutrients.
05:34	It can be treated by giving only the nutrient in which the body is deficient.
05:40	Next, let's discuss the availability of type 1 and 2 nutrients from breastmilk.
05:47	Breastmilk contains stable stores of type 2 nutrients.
05:52	They do not change even if the mother is undernourished.
05:57	The baby of an undernourished mother can grow well with adequate breastfeeding.
06:03	By contrast, the quantity of type 1 nutrients in breastmilk is not stable.
06:09	It varies as per mother's self-nourishment.
06:13	Let's take vitamin D as an example.
06:17	Breastmilk of a mother deficient in vitamin D has less amount of vitamin D .
06:23	Next, let's discuss the diagnosis of type 1 and type 2 nutrient deficiencies.
06:30	A type 1 nutrient deficiency is commonly diagnosed in 2 ways.
06:36	First, the unique symptoms of the deficiency are recognised.
06:41	Then, the level of the nutrient in the body is measured by a blood test.
06:46	Let's take iron and iodine as examples.
06:50	In iron deficiency, symptoms such as pale skin and fatigue are recognised.
06:56	The level of haemoglobin in the body is measured by a blood test.
07:01	Iodine deficiency is also diagnosed by its unique symptoms and tests.
07:07	Symptoms such as swelling of the neck,
07:10	weight gain and
07:12	hair loss are recognised.
07:14	The level of iodine and thyroid hormones in the body is measured by blood tests.
07:21	Type 1 nutrient deficiencies are well recognised and treated.
07:26	There are various ways to correct a type 1 nutrient deficiency.
07:31	One can take the recommended amount of these nutrients in the diet.
07:36	Supplements are also recommended for these nutrients.
07:41	Iron,

	vitamin C and
07:43	folic acid supplements are commonly prescribed.
07:47	Food is fortified with type 1 nutrients in areas where deficiency is common.
07:53	A well-known example is salt that is fortified with iodine .
07:59	A qualified nutrition expert can provide guidance on these methods.
08:04	Diagnosis and treatment of a type 2 nutrient deficiency is difficult.
08:10	There is only 1 way to diagnose any type 2 nutrient deficiency.
08:15	It is to measure and track
08:17	the weight, Height
08:19	and mid upper arm circumference.
08:22	However, this will only help in detecting growth failure.
08:27	Growth failure is caused by every type 2 nutrient deficiency.
08:33	It is difficult to determine which specific nutrient the body is deficient in.
08:40	So, correcting a type 2 nutrient deficiency requires all type 2 nutrients.
08:47	Food rich in all type 2 nutrients must be given in such a deficiency.
08:53	Increasing only the quantity of previously given food will not work.
08:59	Previously given food failed to provide type 2 nutrients to the body.
09:04	The quality of food must be changed for normal growth of the body.
09:10	Please consult a qualified nutrition expert for further guidance.
09:15	Food sources of type 1 and type 2 nutrients are discussed in other tutorials.
09:22	Please visit our website for more details.
09:26	This brings us to the end of this tutorial. Thank you for joining