Time	Narration
00:00	Welcome to the **spoken tutorial** on the importance of **choline**.
00:05	In this tutorial we will learn about:
00:09	Primary functions of **choline**.
00:12	Causes and symptoms of its deficiency.
00:17	Requirements for different age groups.
00:21	**Choline** is an essential nutrient.
00:25	It is required for vital functions in the body
00:29	and for overall health.
00:32	Vital functions like maintaining the cell structure and
00:37	functioning of cells.
00:40	**Choline** helps in carrying the nerve impulses from neuron to neuron.
00:47	It also helps in carrying impulses from neurons to organs.
00:54	**Choline** plays a role in normal functioning of the liver.
00:59	Transportation of fat and cholesterol also requires **choline**.
01:05	It is involved in muscle control,
01:09	memory and **circadian rhythm**.
01:13	**Circadian rhythm** is a process that regulates our sleep and waking up cycle.
01:21	**Choline** is required during fetal development.
01:25	It is required for brain
01:28	and nervous system development of the baby.
01:32	It influences the closure of the **neural tube**.
01:37	**Neural tube** in the embryo forms the brain and spinal cord.
01:43	There are various factors that can cause increase in the deficiency.
01:49	The metabolism of **choline**, **folate**, **vitamin B12** and **methionine** are interrelated.
02:00	If availability of 1 nutrient is disturbed, other nutrients are also affected.
02:08	Inadequate dietary intake of **folate** and
02:12	**Vitamin B12** causes **choline** depletion.
02:17	Apart from these, having a poor diet can cause **choline** deficiency.
02:24	During pregnancy and lactation, the requirement of **choline** increases.
02:30	If these requirements are not met then deficiency occurs.
02:36	This can cause **neural tube defects** and
02:40	**stunting** in children.
02:43	**Neural tube defects** are birth defects that affect the nervous system and spine.
02:51	It also affects their brain development.
02:55	Intelligence and motor development also get affected.
03:01	Deficiency in growing children leads to poor memory.
03:06	They will also have difficulty in learning.
03:10	In adults, **choline** deficiency can cause damage to the muscle and liver.

03:17	Due to **choline** deficiency fat does not move out of the liver.
03:23	This leads to fat accumulation, causing **non alcoholic fatty liver disease**.
03:31	**Choline** deficiency can also lead to **Alzheimer's** disease.
03:36	In **Alzheimer's** disease memory and thinking skills are diminished.
03:42	Adequate intake of **choline** varies for different age groups.
03:48	For 0 to 13 month old infants it is 125 to 150 milligrams per day.
03:57	For 1 to 8 years old children it is 200 to 250 milligrams per day.
04:06	9 to 13 years old require 375 milligrams per day.
04:13	14 to 18 years old need 400 to 550 milligrams per day.
04:22	Adult men require 550 milligrams per day.
04:28	Adult women and pregnant women require 450 milligrams per day.
04:36	Lactating women require 550 milligrams per day.
04:42	Our body does not produce sufficient amounts of **choline**.
04:47	Hence it has to be taken through food.
04:51	Let us look at the food sources of **choline**.
04:55	Eggs, chicken liver,
04:58	fish,
05:00	wheat germ,
05:02	nuts,
05:04	seeds
05:06	and legumes are good sources.
05:09	Let's look at the amount of **choline** present in a few food items.
05:16	1 egg has around 147 milligrams.
05:21	100 grams of chicken liver has approximately 190 milligrams.
05:27	100 grams of salmon has nearly 79 milligrams.
05:34	30 grams of raw split black gram has around 62 milligrams.
05:42	100 grams of cauliflower has 127 milligrams.
05:48	30 grams of soybean has 36 milligrams.
05:54	Include these **choline** rich food in your daily diet for good health.
06:00	This brings us to the end of this tutorial. Thank you for joining.