

Course Name: Adolescent Health and Well-being: A Holistic Approach

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Lecture 07 - Special Nutritional Requirements in Adolescents

Hello everyone. Let us start today's session that will be on the Special Nutritional Requirements in Adolescents. In this area or in this session I will cover the importance of nutrition in adolescent age group, specific nutrients required in 10 to 19 years of age, the concept of balanced diet that means, also I will give you the idea of plate for the day and the growth monitoring of adolescents. Here are certain keywords those are balanced diet, growth charts, healthy snacks and dieting.

At first, we will see why nutrition is so important in adolescent age group that means, why we need to know that special nutritional requirements in this age group. Because, we know that adolescent age group that is the 10 to 19 years of age and it is a period where there is rapid physical and mental growth occur. What is the meaning of that? That means, they gain final 20 percent of their adult height, achieve 50 percent of their adult body weight as well as they accumulate up to 40 percent of the adult skeletal mass. So, you can see that nearly 50 percent of their growth and development that occurs during this period and that growth and development that is not only the physical growth, but also the mental growth. Now, here we can say that it is the period it will give you a time or it will give you an opportunity to catch up growth in your life. What is the meaning of that? Even if there is a deficiency in the earlier life means, even if there is a malnutrition in the children less than 10 years of age, they will get a chance at this age or at this period that they can inculcate some new dietary habits or some healthy dietary habits. So, that they will become healthy, they can correct their deficiencies what was there in the earlier childhood and also the healthy adulthood they will get in the future.

If there is inadequate nutrition then what will occur? Then it will slow or stop the linear growth as well as it will delay the sexual maturation. In our previous lectures we have already told that what are the physical and the physical development occur during this adolescent age group. So, all those things like the linear growth and all those maturation

will be hampered. It will also compromise the peak bone mass. So, the bone will be fragile in the later life and it is been seen that it will make them susceptible to many of the micronutrient deficiencies. Those deficiencies are mainly the iron, calcium, zinc and vitamin D, it is been proved in different researches also. So, if there is deficiency in the linear growth, if there is micronutrient deficiency, if there is a developmental delay in the bone or if the bone become fragile then ultimately all those things lead to their less growth potential. They will not achieve their actual growth; they will not achieve their proper development or adequate development when they will become the adult. Another thing, I want to emphasize that adolescent girls they need the extra care because you all know that adolescent girls when they will become the women they will come in the child bearing age group that time their nutrition will ultimately affect their child nutrition.

If the mother is malnourished, if there is a problem if there is micronutrient deficiencies or if there is the proper weight increment is not there in the mother then definitely their child or the baby which will born from them they will be of low birth weight and ultimately that baby will not grow properly or baby will not be healthy in their later life. So, there are certain behaviors we usually see. The parents who are having the adolescent children or who are having their adolescent in their home they are actually facing the problems or they are actually well aware of these things. Many of the times parents are telling that I am trying that my child should take food at home, but she or he is not ready to take it. And why this type of behavior or why this type of changes of eating habits is there in the adolescents because now a days we see that adolescents are taking more and more junk food. They are consuming more high fat high salt high sugar foods, why? Because we know that not only the physical growth is there during this adolescent period, but the cognitive, social and emotional changes also occur. If these changes occur during this period that, all the time they have the search for their own identity, they want to feel their independence, they want to have their independence, they are more concerned about their external appearance and all the time they feel whenever they are going outside, their peer should accept them. But the active lifestyle, lack of adequate knowledge regarding the proper nutrition or adequate nutrition, lack of time due to scholastic pressure - all these things make them or these things force them to take the junk food. And other things what we have found or it is been proved in different studies that spending more screen time, girls and boys are more interested in their mobile phone, they are more interested in video gaming and they are very less interested in outdoor games. More and more the screen time is increasing their sedentary lifestyle is increasing more. Also, increase of their junk food taking is related to the advertisements, whenever we see some pictures of delicious foods that pictures of burger the pictures of soft drinks that time we have a feeling to have it. Another is the fast food culture, now the parents are so, busy in their life that they have very little time to cook at home. Many of the time they give fast food to their children, even if the child less than 5 years old they are giving them the

readymade food. All these cultures and all these habits or all these factors ultimately lead to a specific eating behavior among adolescents. And when these adolescents are growing up these habits are not changing. They remain in built in their mind and whenever they are becoming the adults that time, they are following the same things what they were doing in their adolescent period.

Now, many of the time the parents ask me that how will I know that my child is growing healthy or how will I know that his or her nutrition is ok. There are various methods that we doctors follow even if some methods are complicated, but some easy methods are also there. So, what you can look for that your child is not looking pale and he or she is active he or she is not irritable, cranky and is getting a good sleep then you can see or you can assume that your child is getting a good nutrition. Another way that what is the amount the girl is taking if the girl child is taking slightly more than the mother and the boy is eating equal to the father in the adolescent age group then it is a good measure of calorie intake. We usually advice that you do measure their weight and height at 6 monthly interval and it can be done by the trained health worker or the doctors. There are certain charts or there is certain graphical presentation by which you can know that what is the status of your child's nutrition. There are certain WHO growth charts. World Health Organization have provided some growth charts where you can point out your child's nutritional status very easily. For that what you have to do? You have to calculate the body mass index. Now, how can you calculate that? That is weight in kg divided by height in meter square.

Here is the graph that is provided by World Health Organization where we can assess by putting a point and say that the adolescent child is suffering from malnutrition or not or underweight or not. This pink graph is for girl and if the color is blue, I will show you in my later slide, then that chart will be for boys. Let us see how can we put the points or how can you assess the children is under weight or over weight. Here in this axis, you can see that it is the age that is in completed months and years and in this axis that is the BMI. So, if you want to put the BMI you have to put here and if you want to put the age you have to put here. Now, see here is the graph I have put the BMI here and I have draw a line. Next here the child's age is 14. So, I have drawn another line, these 2 lines have met in a point. This point will show you the actual weight or actually the child is overweight or normal or the child is under weight. So, if the point is below the 2 standard deviation that is called thinness and below the 3 standard deviation it is severe thinness. And if it is above this line then it is over weight and it is above the 2 standard deviation that means, above this line then it is obesity. Now, this is the same graph, but this graph is for boys. So, in this way you can assess the child's weight that he or she is falling in the underweight group or in the overweight and the obese group. Though I will suggest that first time or if it is not possible by you then you take the guidance of the skilled health worker and you can take the guidance of the doctor.

Now, if you want to have this proper nutritional status in this age group or if you want to have the good nutrition then you have to take the balanced diet. So, what is the idea of this balanced diet? Balanced diet means they include all food groups. Those food groups are cereals, pulses, vegetables, fruits, dairy and meat and these food groups should be there in your diet every day. And what is the proportion of energy intake? That energy intake can be divided into 3 parts, energy coming from carbohydrate, from protein and from fat. So, from carbohydrate the energy intake will be 50 to 65 percent whereas, from the protein it will be 10 to 30 percent and from fat it will be 25 to 35 percent. And remember one thing that you should take 3 major meals that means, the breakfast, lunch and dinner and 2 to 3 snacks per day. And in all type of major meals, you have to take different food groups and try to have a healthy breakfast and avoid skipping meals.

So, remember these things whenever you are taking the meal then definitely you have to take the balanced diet. Now, what is the calorie requirement in adolescent boy and girl? Usually, 2400 to 2800 kilo calorie for boys and for girls it is 2100 to 2400 kilo calorie. Why this range is there because it depends on the physical activity. If the boy is more of a sedentary habit, then he will take 2400 kilo calorie. But if the boy is doing some athletic activities or some sports then he needs more kilo calorie, more energy that time he will take 2800 kilo calorie. And for the girls who are having more of the sedentary habit they will have 2100 kilo calorie. Whereas, if she is engaged in some athletic activities or sports, she should take 2400 kilo calorie.

Now, we will have the idea that what are the meaning of the go food, grow food and glow food. Let us have an idea. So, it will be easy for you to pick up those food among these food groups. If you are thinking about the go food that means, these foods are actually the energy giving foods. And those are cereals, fats and oils and sugars. So, how much cereals you will take? That is 8 to 15 serving and each serving will be 30 grams. And what will be there? That may be whole wheat, rice, meat, jowar, corn, bajra, buckwheat and amaranth. And when you are considering the fats and oils that will be 7 to 10 servings and each serving is 5 grams. And always try to mix the oil because already I have given you the idea of the saturated and unsaturated fat or the idea about the functions of fat. In my previous lectures I have told you that whenever you are consuming fat there should be more amount of unsaturated fat and less amount of saturated fats. So, if you mix these oils or if you mix these fats and oils in your diet then the proper amount of unsaturated and saturated fat you will get and also you will get the essential fatty acids. There are 3 groups I have given here you can try it out as per your choice. The first one is the desi, ghee or butter and palm oil. Next one is the mustard, sesame, groundnut, olive and coconut oil. The third one is the sunflower, safflower, swabbing and cannula. One third of each you can take it and mix. Now the sugar quantity that is the 4 to 6 servings and 5 gram each, try to take less sugars. We will tell you the effect of high saturated fats, high content of sugars, high content of salts what we get in

the fast food, what we get in the junk food. Now the grow food. The grow foods are actually nothing but the growth promoting foods. Growth promoting foods they are mainly the pulses and for nonvegetarians they are fish, meat, chicken and the milk products. How much pulses you will take? That is the 2 to 3 servings of 30 gram each and it is about 2 katori cooked variety of dal, beans and lentils. But if the person is non vegetarian then they can take some other thing like egg, meat, fish and chicken that is of one serving. And next coming to the milk and milk product that should be 5 servings of 100 ml each. And it includes the low-fat milk, butter milk, curd, cottage, cheese, vegetable milk. Now, the glow foods. Glow foods are nothing but the protective foods. So, they contain the fruits and vegetables and green leafy green leafy vegetables and other colored vegetables. How much fruits you should take that is 2 serving of 8 gram each. How will you know? That is 1 medium sized apple or banana or orange, mango or 2 small kiwis, plums, apricot or you can take 250 ml of fresh fruit juice. But I will tell you that the whole fruits is always preferred over the fruit juices because the whole fruit will give you the fiber and definitely you will get the benefit of fiber that already been discussed in my previous lecture. Now, coming the green leafy vegetables and other vegetables that is 1 serving of 8 gram of green leafy vegetables that is nearly 1 katori and 1 serving of other colored vegetables like red, yellow, violet how you can get like brinjal, capsicum, pumpkin, peas and 1 serving of tubers, radish and cucumber. So, these foods they actually will provide you the vitamins and minerals that is why they are telling they are called the protective foods. And you know that many of the vitamins, minerals that I have already told like iodine, zinc, iron, calcium. Those things are very important for our normal growth and development. Not only the fruits and vegetables you should take some nuts also. And the amount is 30 grams. The measurement is handful of walnut, peanut, groundnut, almonds or cashew. You can take the fibers that is 15 to 25 grams from fruits, vegetables, whole grain like whole wheat bread. Now, this fiber will not only increase the bulk of the food, but also it will increase the satiety and it will prevent the constipation. But do not forget to take adequate amount of water that may be 1.5 to 2 liter per day, but this intake of water is completely dependent on the person's physical activity. If the child is active throughout the whole the day and if they are doing the outdoor games, if they are staying in a hot humid climate then definitely the quantity of water intake should be increased. So, it is not a hard and fast rule that you have to take this 1.5 to 2 liter, but try to take this and depending on your requirement you can take more water. But one thing I want to emphasize that girls need extra amounts of green vegetables and dairy products like iron and calcium to compensate their menstrual blood loss. So, this is the whole idea of the balanced diet.

Now, we need to have the concept of thali. That concept of thali was given by National Institute of Nutrition as well as the same type of concept was given by the US food and nutrition department that is the “choose my plate” concept. So, what is that concept? I will rather tell it as a model plate. Whenever you will see the picture of this model plate,

you have to think about whenever you will eat that time this proportion should be there in your plate. But mind it that it is not like that every time you will take the meal these types of varieties will be there in your plate. It is actually the meal planning or it is a picture of your whole day planning. So, in the whole day you have to take the adequate fruits, vegetables, cereals, nuts and milk. Let us see what is there in the model plate. So, you can see that if you divide the whole plate into 2-part, one part it constitutes the fruits and vegetables. So, and the other half that constitute the cereals, the pulses, eggs, flesh foods, nuts, seeds and fats and oils. You can see that very little amount of fat is required and very little nuts and seeds are required. But a larger portion is there nearly two third of portion is there that is the cereals or nutri cereals and there are pulses, eggs and flesh foods. And also, it contains that 300 ml of milk or curd. If you are thinking or if you are planning a meal for your whole day, try to consume these fruits, vegetables and cereals, pulses, milk all according to these proportion. It will provide you lots of benefits.

Let us see what is the benefit of the model plate. It will improve your immunity and resistance to infection because of this COVID infection in the past few years we are all aware that whatever may be the health condition, whatever may be the situation if your immunity is good, if your health condition is good then there is a chance that the you will acquire the infection late or maybe you will not acquire the infection or maybe you will acquire the infections, but the effect of the infections will be less. This model plate will provide you a good immunity and it will maintain a good microbial flora. We know that synthesis of various vitamins, this microbial flora is needed and lots of other beneficial acts also done by these bacteria which is situated in the intestine. The food in the model plate that will help to maintain those microbial flora and ultimately it will prevent the diabetes, cardiovascular diseases like heart attack and stroke and it maintains the alkalinity and thereby it reduces the inflammation and ultimately it will decrease the chance of kidney stone formation. Also, it will prevent the insulin resistance. So that the it can maintain the appropriate insulin sensitivity and glycemic index. It will ensure the adequate intake of fiber that prevent constipation. Not only constipation also it will increase the bulk of the food, it will increase the satiety. So, that the people who are overweight and obese they also will be benefited from this model plate. Now, the it will prevent the adverse effect of environmental pollution and toxins by working as a detoxifying diet. So, you can see that there is a huge impact of this model plate on our health. It is not only providing the immunity, but also it will help to prevent lots of diseases in your later life.

Now, here is certain behavior modification that is required in a family. Many of the time I have heard that parents are struggling to maintain a healthy eating habit in their children, but they are facing so much difficulties, but one thing is you should remember that the habit you will inculcate in your children from the very beginning of their life that will be the sustainable habit and that will stay in the adulthood. So, involve your adolescent

whenever you are buying and storing food. You are planning a menu or take the help of them in the cooking for their self or be with a family food. And one should be there in the family when they will take the bell of sitting together because it is the best time to interact, discuss and you will catch up the activities of your child. And that meal time you just strictly say no to the media. not only the mobile, but the newspaper, radio all these this sort of intrusion should not be there during the time of eating.

Healthy, wholesome, tasty and variety of snacks you can make it and you can keep it at your home. So that the teenagers whenever they are feeling hungry, they can take it and it will be a habit of them to take those healthy and tasty snacks whenever they will feel hungry. Here are certain healthy snacks example and you can try it at your home. It will be easy for you to keep these things at your home and the nearby area. So that your child will take it and will make it a habit. Whenever they are going to outside, they will keep those snacks in their bag. So, even if they are feeling hungry, even if they are feeling under the pressure of their peer even if they are feeling that they should take the junk food, but the habit you have made it at home that will compel them to take this healthy snack.

Next thing is that dieting is good or bad. Many of the time I have been asked by parents. I will tell you that evidence has already been shown that crash diet is never good for long run because after few years you will not be able to follow that strict dieting plan. And ultimately you will gain weight again when you will stop that strict dieting plan. Another thing is skipping meal is not advisable because it will lead to weakness, lack of concentration, it will slow the protective reflexes, dullness and there is episodic excessive eating what we usually called as a fast feast cycle. So, it is not at all good for your health. You need to eat a balanced diet and along with that you need a regular physical activity that may be running, brisk walking, jumping, swimming, dancing and at least 1 hour in in a day and most of those days in a week. We will give you a detailed plan of physical activity that how long you will do, what type of physical activity will do in a day or in a week. So, we have our classes on that and try to attend that and it will be helpful for you. And another thing is for preventing the dieting there is a big role of parents. Now, parents are the ideal role model for their children.

Many of the time the adolescents they have the body image issue, if they are becoming overweight or if they are becoming obese that time, they feel that they have a very poor body image and it will decrease their self-esteem. I will tell the parents I will request the parents that you just do not put emphasize on people's external physical appearance in front of your children. And do not engage them in the discussions about the body image portrayed in the media. It will be very helpful because external appearance does not matter. If your knowledge is so good, if you are healthy and if you can contribute in the in your community in a way as a healthy adult or as a healthy adolescents then does not matter what is your external physical appearance. And advise them to exercise for

energy, health, strength rather than for outward appearance. And if these problems are not getting solved then I will advise them to consult doctor or counselor.

Now, another questions I used to get that this protein powder what we are getting in the market they are good or bad. Even if some athletes and body builders they need more amount of the protein it is advisable that not to take the protein powder. Because it can harm the kidney and liver. It can cause dehydration and it can be contaminated with steroids and other harmful ingredients that you do not know. So, if you want to consume or if you want to have more protein then try to consume more dairy products lentils, beans, eggs and fish instead of the supplementary protein powders. Now, I will tell all the parents that you should do some nutritional consultation from the very beginning.

Whenever your child is entering in the adolescent age group that early period that means the 10 to 12 years' time is the early adolescent period. That time you do the growth assessment and nutritional guidance. And afterwards just follow a 6-month interval visit, but it is not required that all the time you have to go that 6-month interval. If you are getting or if you are acquiring some problems in your child you can go to visit the doctors or counselors. So, in the day-to-day basis you have to look after though these problems if you are acquiring in your child like your child is not gaining weight or height or both. And gaining excessive weight obsessed about the external appearance and food, binge eating or little eating or no eating at all, developing food fads the vegan diets habit or the celebrity diet habits. Even if you think that your child is tiring very easily, they are dull, sleepy and all the time irritable, they are becoming angry and they are sitting aloof, they are not mixing with their peers or not talking with you very comfortably. If your child is having bone pain, fractures, easy bruising, dental problem and the falling dry hair, change of the bowel habit, even child's school grade is getting decreased, even the mood and mental health issues if you are acquiring like if there are problems in shape or if there is jokes about the suicide you are getting from your child or any sign of tobacco, alcohol and drug use. If you are getting all these signs and symptoms in your children then definitely you should consult a doctor or counselor.

These are my references.

With this I want to conclude this session.

Thank You.