

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

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Institute Name: IIT Kharagpur

Week: 03

Lecture: 11

Lecture 11 – Nutrition Care Process

Hello everyone.

Let us start an important and interesting topic, Nutrition Care Process. In this lecture, I will try to cover nutrition care process as well as the model, nutrition assessment, diagnosis, intervention, monitoring and evaluation and also how to do the dietary assessment. Here are certain keywords like anthropometric measures, body mass index, 24 hours recall method, NCP model and nutritional assessment.

Start with the Nutrition care process. Initially or earlier days, we have an idea that if we want to improve the nutritional status of a person just, we have to measure the body weight or height and we have to assess that he or she is falling in the over nutrition and under nutrition and just have to give him the dietary advice. But nowadays the idea has been changed. If you want to improve the nutritional status of a person then you have to go through a systematic approach to provide the high-quality nutrition care and that is the nutrition care process. It is initially adopted by Academy of Nutrition and Dietetics in 2003. There are four distinct and interrelated steps in this process. Those are nutrition assessment, nutrition diagnosis, intervention and monitoring as well as evaluation. We will see one by one.

And here is the graphical visualization of the model or you can see that the nutrition care process that is depicted in the nutrition care process model. Here we will see that some internal and external ring. Here is the actual picture. There are internal and external ring and a core. The four stages are here that is a nutritional assessment, reassessment, nutritional diagnosis, then is intervention, after that the monitoring and evaluation. There are outer ring and the inner internal. So in this outer ring you can see that there are practice setting, health care system, social system and economics. So, these are the external environment which are affecting the total nutrition care process. Whereas in the inner ring you can see the collaboration, the skill and competencies, the communication skill, evidence based practice, critical thinking of the nutritionist or dietician, documentation, code of

ethics these are all the features of a dietician or nutritionist that ultimately lead to a good nutrition care process. Finally, in the core there is the individual population when they are interacting with the nutritional professionals. There are four quadrant you can see those are four steps that is nutritional assessment, diagnosis, intervention, monitoring and evaluation. All are interrelated. Even if we can see that this is unidirectional, but actually in practice setting I can say that this is the multidirectional because you need a coordination between all these things. There are referral system and the outcome management system. All those are also the part of this nutrition care process model.

Now what is nutritional assessment? Nutritional assessment that includes the collection and analysis of data to identify nutrition related problems and their underlying etiology. It also includes the reassessment. You can see that this is very important, because whenever you are doing only first-time assessment that time you are just taking the first-time data like physical examination, medical records, their lab analysis, their interview you have to do the interviews with the caregivers, the consultation with health professionals and finally, you want to correct the energy or nutrient imbalance or you have to decide that whether a care plan is working or not. So, this is the initial step you have to do and after few days you have to do again the reassessment because if you do the reassessment then you can identify that what are the loopholes what are the area you need to emphasize and then only you can make a final nutrition diagnosis.

Now, here are certain domains of nutrition assessment like food and nutrition related history you have to take that how much or what are the quality of food the person is taking, if the person is taking any medication, if that person is taking any complementary or alternative medicine, their knowledge, belief, food and supplies, availability and as well as the physical activity. You have to take all those histories. Now, the anthropometric measurement that means, the measurement of the height, weight and body mass index and also the weight history during the last few months whether there is increase of the weight or decrease of the weight. Next is the biochemical data, medical test and procedures like lab test those are electrolytes, glucose and the different test like gastric emptying time, resting metabolic rate and the nutrition focused physical finding those are the physical appearances, muscle and fat wasting and appetite etc. I will show you what are those clinical signs and symptoms which are related to nutritional deficiencies. Some other related history like personal history, their family history and as well as the social history, then you have to done the monitoring and evaluation and for that you need tools and that tools are used for the health or disease status, risk assessment, reassessment and finally, you have to categorize your diagnosis in a specific etiologic category and then you will do the evaluation. The evaluation of the progress towards a nutrient related goals and resolution of a nutrition diagnosis. So, these are the certain domains of nutrition assessment.

When you have done your assessment then you have to do your nutrition diagnosis. What will you do there? You have to identify and label the existing nutritional problem and you should remember these thing that nutrition diagnosis is different from medical diagnosis. In

medical diagnosis what we usually do that yes the person has diabetes, yes the person has hypertension, yes the person is suffering from cardiovascular disease we tell like that, but whenever you will do your nutrition diagnosis that time you will tell that whether the person is taking much or less of specific nutrients like you can say that inconsistent carbohydrate intake. Well and for that you have three domains one is taking too much or too little of food or nutrient compared to their estimated requirement what already I have told in our earlier slides that there is dietary recommended intake. So, for one individual there is a specific recommendation or guideline. You have to see that whether the person is taking less or more than the guideline. Now, the clinically you have to see that the person is facing any physical problem due to those nutritional deficiencies or the excess of the nutrient content of the food and the behavioral environmental part. You have to see the knowledge, attitudes, beliefs, the physical environment as well as the access of food and the safety of the food which is also important in this matter.

Now, whenever you are making the diagnosis that time you have to make the PES statement that is the problem or nutrition diagnosis term etiology, signs or symptoms. Like in PES statement you will describe the problem, you will tell the root cause and also you will assess the data that provide evidence for the nutrition diagnosis. First and foremost, you will write the problem or nutrition diagnosis. You have to describe the alteration of person's nutritional status. Giving an example like you are seeing an adolescent girl. You have diagnosed that the person has come to you with less scholastic performance than their peers, there is no other problem. Then you have taken the history that what she is taking how many meals they are taking and how she is taking the food, along with whom she is taking the food and when she is taking the food that food is homemade food or the easily available junk foods. You have taken all those history on that and from that you have come to an point the girl is deficient in energy and nutrient intake. So, your diagnosis is that girl is not taking the adequate nutrition or nutrient based on the recommended dietary intake and you have your diagnosis, the etiology or causes of the contributing factors. So, you diagnose that the person is not having the adequate intake. Now, there are certain contributing factors. Her parents are very busy. So, they are not making homemade food for her or may be that she is staying at the hostel and in the hostel, she is not getting the adequate nutritious food. Now coming to signs and symptoms. You have assessed the signs and symptoms. The girl is pale looking and her hairs are brittle or very weak. So, you can tell by seeing other features that the girl is suffering from anemia. If you are doing some lab test then you can prove that in her hemoglobin is less than the normal. So, you can say from this that the girl is suffering from anemia. Due to her inadequate nutritional intake in the diet or maybe you can tell from some lab test that anemia is iron deficiency anemia. So, you can tell more precisely that the girl is deficient in taking the iron rich foods.

Now, what will be your intervention? That is the nutritional intervention. In nutritional intervention you will just change the nutritional related behaviours, the risk factors, the environmental conditions or aspects of health status to resolve the identified nutritional problems. One thing you should remember that whenever you are doing some nutritional intervention that interventions will be directed to the etiology of the problem, main root

cause of the problem rather than the signs and symptoms of the nutritional problem. If you are just treating the signs and symptoms and ignoring the root cause then definitely that the problem will come again you cannot treat the problem for lifelong. So, repeatedly the person will come to you with the same signs and symptoms after few days or after few months.

There are 5 domains whenever you are thinking of nutritional intervention. One is your food and nutrient delivery. So, there should be a customized approach of food and nutrient provision like the example I have given to you that the girl child who was suffering from iron deficiency anemia, you have diagnosed. You have to give some food or you have to advise to the child that she need to take more iron rich food or you have to tell her parents that she needs to take more iron rich food that is the customized approach of food and nutrient provision. So, you will tell her that what are those food where she will get more iron like green leafy vegetables, the lentils, the meat, fish, eggs.

Now, nutrition education. Nutrition education is nothing, but you have to make aware of the person that the deficiencies in your diet that will be fulfilled when you will take the specific food means it will help people voluntarily to manage their food intake, their physical activity choice and their behavior to maintain or improve the health. That is the whole gamut of nutrition education. Next is nutrition counseling. Do not think that if you are telling the person that you have to take this food or you have to take fish meat egg and she will take all those things you are assuming that. She will follow all your advice it is not like that. Specifically in this adolescent age group they have dramatic change in the physiological and psychological health. So, even if you are advising that time, they will tell yes, I will do, but later on when they are coming in their real life, they are forgetting to do those things and many of the time they will not follow your advice fully. Then you have to do some counseling. What are the priority areas that you will tell in the counseling? You will tell them about the food habits, nutrition and physical activity priorities. You have to set some goals and you have to set some action plans. So, that the person will themselves responsible for their self care. Next is the coordination of nutrition care. Not only that you are telling that you have to take this type of food that is sufficient. To improve the nutritional status of that person you need to consider some other health conditions. There may be some underlying diseases that is why even if she is taking the adequate nutritious diet, there is a problem. Like there may be some worm infestation. there may be some other diseases like she is suffering from frequent respiratory tract infections. So, whenever you are thinking to guide a person that you have to take the healthy food that time definitely you have to take care of the related matters like other health conditions, the comorbidities that are hampering their actual nutrient intake. You have to coordinate with other care providers, other institutions or agencies those will help to improve the nutrition related problems.

Finally, the population-based nutrition action that is a larger area to discuss. So, first we will target an individual and further when we will see that any area all those adolescents are suffering from anemia or not then you have to formulate some guideline of you have to formulate some advice specific for that area. So that the population in that area or the

adolescents in that area they will get benefited from that intervention. Now, when you are planning to do the nutrition intervention what you need to do that time you have to prioritize your urgency impact and available resources even if you are thinking that is the best option. giving the example. Even if you are thinking that dates are a very good source of iron, but in some places, in some villages may be dates are not available. So, you have to think that what is available in your hand, what foods you will advise to that adolescent girl that she can easily take the iron rich food. So, whenever you are planning to do nutritional intervention to a person that time you have to look after the available resources and the what is the urgent need. Then you have to identify the goals and the interventions of each diagnosis. Then you have to make a nutrition prescription based on their customized recommended dietary intake. I will tell you how you can make the prescriptions in my coming classes and this prescription definitely will be based on the current knowledge and evidence. And in this prescription, you have to write the time and frequency of the care and also include the intensity, duration and follow up. So, all these things you have to do when you want to implement a nutritional intervention. Before implementing that you have to plan all these things earlier in your handbook then only you can give your proper advice or then only you can think some specific outcomes from your nutritional intervention.

Now, you are going to implement the nutrition intervention. So, what you have to do? You have to collaborate many things or carry out the plan of care. You have to communicate those plans whatever you are thinking that yes you have to take this thing and afterwards you have to measure your hemoglobin then again you will come. If the hemoglobin is not increased then you have to take more iron rich foods, how can you take those iron rich foods divided in your different meals. So, you have to tell all these things to your client or to that adolescent girl or maybe her parents and according to her need you have to modify. It may be the fact you are advising some iron rich food in the initial prescription and after 15 days she is coming and saying that these foods are not available. So, initial phase you have to do the frequent follow up like after 3 days or 7 days. You will tell them to have those what are available to your places and if those are available and your prescription will be modified depending on those availability as well as depending the need of that person.

So, there will be always a revision in your strategies during the implementation phase of your nutritional intervention. Finally, you have to do some monitoring and evaluation. How will do that thing? You have to identify some outcomes indicators which are relevant to your diagnosis and nutritional intervention. Again, do not think that whatever you have done in the initial phase that you will do only in the initial phase, you have to do that thing intermittently even you have to take the history, you have to do the anthropometric measurements, you have to take the biochemical data from medical test. Nutrition focused on the physical finding and their assessment. All these things what you have done in the initial phase, whenever you are doing the monitoring and evaluation you have to do all these things again and again. Then you can understand that really your nutritional plan or your nutritional intervention is working or not. So, what we will do at the initial stage? At first make some appropriate indicators or outcome and you will evaluate that thing in the next interactions. And these outcome indicators are used during the subsequent

interactions to illustrate the level of the progress and whether the goals or the anticipated outcomes are being made. So, you can see that this is a very dynamic and ongoing process it is not like initially you will just do a prescription and sit down at the end of 2 months or 3 months to see that the person has increased her weight or the person has improved her hemoglobin level or not. The example I have given, anemia in a girl child. It is a dynamic process. So, you have to give your focus to a person and it is not only the dynamic it is very individualized. Every person, their need their culture and belief, their knowledge, their physical activity, their mental status those things which improve or disprove the nutritional status all those things can ultimately lead to nutritional care process.

Here are certain nutritional screening tools these are easily available online you can go through that, but one thing you should remember that these nutritional screening tools that will have the specific characteristics those are simple to use very cost effective, there should be quick assessment, that should be standardized validated and also the sensitivity and specificity will be very high. Here are the examples of nutritional screening tools. There are subjective global assessment, mini nutritional assessment, malnutrition screening tools and many more.

Now the important thing is the components of nutritional assessment which is very easy to remember as ABCD. That is very the practical thing whenever we were doing a nutritional assessment. First thing A is the anthropometric measurement and B is the biochemical and the lab measurements, C is the clinical assessment and D is the dietary assessment. Now the anthropometric measurement. here you can see that the anthropometric measurements mean the measurement of the height and weight and the calculation of the BMI in case of children and adolescents. And for infants also we can see the skin fold thickness, circumference of head, waist, limbs. but for adolescents and for practical purpose you can use mainly the height, weight and BMI.

So, the BMI how you can calculate? Already I have told that it is nothing, but the weight in kg divided by height in meter squared. So, here you can see that the depending on the BMI a person can be underweight, a person can be healthy and person can be overweight or the person can be obese. Let us see how can we say that the person or one adolescent is falling in these four groups. I think it is little bit familiar to you because my earlier classes I have already told that this is the WHO growth chart and to assess the malnutrition in adolescents, the this blue one is for boys and this pink one is for girl. In one axis, you have to put the age and another you have to put the BMI. Then you need to draw two lines. These two lines will intersect in one point. If that point of intersection is falling in this zone then it is the normal zone and then the person is falling in the normal weight group or if it is falling this group then he is overweight and if it is falling in this group then there is under weight. And if your child is girl child then you have to take this pink chart. In this chart again you will put the age in one axis and BMI in another axis. So, again here is the same interpretation, like the point of intersection of the that two line if it is falling in this group then it your weight is normal weight and if it is falling in this group that is the overweight, this zone is for the

obesity. Here below this the two standard deviations then it is the underweight or under nutrition.

Now have a look on the BMI cut off value of adults. I will tell you that if you are assessing the nutritional status of the adolescents try to follow that growth chart provided by World Health Organization and here is for your reference that this is the cut off value of adults where you can see that underweight is your BMI cut off value is 18.5 and for Asian Indians it is 18.5, but if you are coming below at the overweight group that part is quite different. Here in the WHO criteria, it is 25 to 29. For Asian-Indians overweight is between 23 to 24.5. So, normally the BMI range you can see in WHO criteria it is 18.5 to 24.9, whereas in case of Asian Indians it is 18.5 to 22.9. Obesity is nearly same, BMI equal to 30 is the obesity, but this cut off value usually we use in case of adults try to follow those WHO growth charts. Those growth charts what I have shown you earlier, put your BMI and age in that growth chart and try to see or try to assess that whether the child is falling in the normal zone, overweight zone or the thinness zone.

Now here is the body composition that you should know. There is a body composition model that can be used for early diagnostic tool and due to age, physical activity, disease and starvation this body composition can be changed. There are three types of models you can see. In the first two compartment model where it is fat mass 15 to 25 percent and fat free mass 75 to 85 percent. If it is three compartment model then there is fat mass 15 to 25 percent, body water 60 percent, protein and minerals 20 percent. Four compartment models that is fat mass 15 to 25 percent, body water 60 percent, protein 15 percent, minerals 5 percent. You should have a very good idea about these things because that will be helpful as a early diagnostic tool. And there are certain methods by which you can determine the body composition like bioelectrical impedance analysis, creatine high index dual energy x ray absorptiometry, MRT that is the magnetic resonance tomography and also the computed tomography.

Next, some biochemical and lab measurements are required already I have told in my nutritional assessment that is based on the urine and blood samples. Periodical measures are required. Repeated measures are required more rather than a single value. Vitamin C, D, E, K even the trace elements, zinc, selenium, iron level, it will be helpful to monitor the current replacement therapies. Here is certain lab test which have the nutritional implications. You have to do some hematological test, the serum protein, enzymes, electrolytes and also others lab tests. That is needed to test initially and also at regular interval.

Now, you have to do some clinical assessment. You have to take some history; you have to do the physical examinations. Clinical features, the physical functions how the person is active and also the person is taking any medication or not. Here are certain symptoms or here are certain features which you will look for to see any nutritional deficiency. There are certain changes. It is the hair changes, eye changes, lips, mouths and gums, skin changes, nail changes already depicted here, those changes you have to look for if you are suspecting that there is nutritional deficiency in that child.

Finally, you have to do some dietary assessment. For that you have to take the diet history. That is the dietary habits and preferences, cultural habits their special diets, if there are any food allergies or not, fluid and alcohol intake. Now, the current dietary intake you have to look for quantification of food intake and do the comparison between the intake and the energy expenditure. Now, how you will do the dietary assessment? You can do 24 hours recall method, the food records or food diaries, food frequency questionnaires or some direct observations. There are certain innovative technologies for dietary assessment like, web-based food records, wearable device that will monitor your food intake, computer aided assessment and also some systems which are based on artificial intelligence.

These are my references for this lecture. With this I want to conclude the session.

Thank you all and enjoy learning.