

SAMPLE

Introduction to Child Nutrition

Lesson Aim

Discuss the nature and scope of developing nutrition for children according to their social and cultural background and subsequent needs.

INTRODUCTION

A child's nutrition should not be limited to a consideration of merely feeding children. Rather children's nutrition should be a holistic approach to the eating patterns and nutritional requirements of people planning to conceive, pregnant and post-partum women, infants, growing toddlers and children, and later adolescents.

Today there are a variety of ways to ensure adequate nutrition for all members of the family. We may add supplements to the diet, purchase pre-prepared meals, we have access to seasonal fruits and vegetables all year round due to importing, freezing and canning and we have a variety of fortified foods readily available in many countries around the world.

In addition to our increasing understanding of nutrition and of the macronutrients – fats, carbohydrates and protein and the assortment of essential micro-nutrients – vitamins and minerals, we may expect populations to experience enhanced nutrition and improvements to general health. That said, it is well-known that nutrition related disease such as malnutrition and deficiencies, Type II diabetes and coronary heart disease, are increasing at alarming rates. Disease and ill-health can often be prevented, even treat, through adequate nutrition.

AN OVERVIEW OF THE HISTORY OF HUMAN DIET AND NUTRITION

While we have an array of food varieties readily available, our early ancestors were much more limited in their choices. Grains and cereals, now a staple in most regions of the world, are a recent addition to the human diet, made available when our ancestors transitioned from an often nomadic hunter-gather lifestyle to a more stationary agricultural lifestyle. Prior to this, wild root vegetables, fruits and berries, lean meat and fish formed the human diet. Dairy was not a feature until mammals like cows, goats, yaks and sheep were domesticated.

Studies of hunter-gatherer diets indicate a significant proportion of the diet was meat, in some cases over 60% of calories in the diet were routinely supplied by consumption of meat and fish. This is much more than the average modern western diet, which averages about a quarter of daily calories from animal sources. It is currently thought that the evolution of man was in part due to the addition of rich protein sources to the diet, that supplied the nutrients needed to fuel increased brain size and stature. With the discovery of fire, and its use to cook foods, along with the switch to crop farming, foods that were previously inedible (potatoes, legumes etc) were rendered safe to eat by the application of heat. Heat destroyed toxins and enhanced the palatability of grains. These foods could then be included in the Stone Age man's diet.

Many people note that agricultural diets in some cases saw a decrease in the population's overall health and stature if meat consumption was minimal. This has triggered debate and the development of many low carbohydrate diets, like the Atkins diet and there are many proponents of a return to the meat rich, dairy and grain free 'paleolithic' diet. Many people are able to lose a lot of weight by removing grains from their diet. There are however very few studies of such a diet and a number of studies indicating the health benefits of vegetarian diets. Vegetarian diets are becoming increasingly popular for both health and ethical reasons. It still remains true however, that protein is crucial in the human diet. Vegetarians simply obtain it from fruits, vegetables and soy products.

So, what is the best diet, or nutritional approach? The majority of people today have a diet that is a combination of the paleolithic and agricultural diets. We eat grains, meat, dairy, fruits and vegetables. In the end it is not whether you eat meat, or not, or grains or not, but rather, understanding what nutrients are important for human growth, development, function and wellbeing, in what quantities different members of our population require them, and why our bodies need them. Iron and protein is generally obtained from meat and fish, but is also obtained from soybeans, legumes and plant foods, fibre is generally obtained through (whole) grains, but can be obtained from root vegetables and some fruits and so on. A balanced approach to nutrition and children's nutrition in particular, relies on a sound understanding of required nutrients, and the variety of foods that we can obtain them from.

CULTURE AND FAMILY BACKGROUND

The cultural background a child is born into will affect their food preferences. This is often simply a case of the child knows no different than what it is provided with. Children raised in Asia and the Middle East have no problem eating chilli and highly spiced, strongly flavoured and aromatic foods. Yet, a child raised in a Western country may be put off if not by the strong aroma of a spiced dish, but they may find taste too overwhelming as their palate would be accustomed to milder foods. When dealing with nutrition and nutritional challenges in young children, the cultural background must always be given due consideration.

NUTRITION AND DIET INFORMATION

It can be extremely difficult to make sense of the vast array of nutritional information available. Much of this is due to personal bias of the authors, and also lack of concrete scientific data. Ethics is increasingly an issue in nutrition and as in any area of research, ethical considerations can turn scientific discussion into personal, heated debate. When conducting your own research and seeking information on nutritional topics, always consider the source of the information. Look at the educational background of the person and always seek the original source of the information and consider the validity, flaws, controls and potential bias of the research that is quoted to support statements. As a general rule, sources which spend more time being derogatory of other opinions are less valuable than those that simply state their own opinion. Comments which are extreme (eating meat will decrease your life span for example) should be viewed with caution, always look for the middle ground, and generally accepted (by professional bodies, professionals etc) information first and then investigate alternative opinions for comparison.

Nutrition for children can be one of the most heated and controversial topics in health. Every parent wants to provide the very best for their child, in terms of care, affection, opportunities and nutrition. As with all aspects of parenting, different parents will have different views on the best diet for their child. This will be influenced by their own upbringing, cultural background, lifestyle, religious beliefs and so on. Many people may fall into the trap of condemning others opinion and taking a moral high ground on their nutritional beliefs for children. This is often counter-productive, as it can lead to division between people with different opinions which inevitably leads to 'camps' that refuse to consider other opinions or combine useful information to gain further insight. The only way to gain an understanding of the variety of ways in which a child's nutritional needs can be met is to take the time to consider not only your own personal opinions and preferences, but to investigate those that differ from it. Only this will give you a well-balanced, comprehensive appreciation of children's nutrition.

THE IMPORTANCE OF EARLY CHILDHOOD NUTRITION

The time from birth to adulthood is one of growth, development, maturation and activity. Nutritional needs of children vary with their age, activity levels, health status, physical size and current rate of growth. Different processes require different nutrients, omega-3 fatty acids and protein are crucial for brain development in babies and toddlers, iron is particularly important when girls commence their menstrual cycle and energy needs will be greater during periods of rapid growth.

It is important to recognise that once formed, nutritional habits, can be hard to break. A child who develops a liking for particularly sweet foods and dislike for vegetables, for example, is likely to find it much harder to maintain a healthy diet throughout life than a child raised with a balanced diet of fresh fruit, vegetables, grains, meat and dairy. The fact that a baby or toddler rejects a food on the first few occasions it is served does not necessarily indicate a dislike for the food, but more commonly a fear of new foods, or a confusion over the unfamiliarity of the new item.

The role of parents and caregivers cannot be understated in children's nutrition. Children learn from observation and when very young have no choice but to eat what is provided to them. Naturally it is understood that parents and carers model behaviour to the children. Albeit this is most often not recognised at the time. Toddlers and young children tend to mimic their parents and strive to be like them, copying their patterns of speech, body language and eating habits.

As children age, they will be influenced by other factors such as media and their peers. In terms of nutrition, many external influences may be deemed as negative. When children develop the idea that some foods are trendy or popular and others are boring, or they are teased for eating healthy items, they are likely to choose poor quality foods over nutritious alternatives when making decisions for their diet for themselves. Naturally peer pressure and the desire to "fit" with peers is a normal part of pre-teen and adolescent development and should be considered by care providers when attempting to encourage and maintain a healthy diet for the young person. Trying to get a child at this age to convert from a poor diet to a nutritious one can be very difficult and trying to force changes is nigh on impossible. The message here is simple, good habits must be established early.

One thing that is commonly over-looked in nutrition is fluid intake. This is particularly important for children who are particularly active or suffer from constipation. Infants source all most of their fluid requirements from breast milk or formula and normally receive all the water they require from that until they are 6 months old. It is important to ensure that after weaning children have access to plenty of quality fluids, primarily water, although milk and fresh fruit juice can be included in their diet as well.

Without a balanced and varied diet of vegetables, fruits, grains, protein sources and calcium, iron and vitamin D sources growing children are at risk of:

- Poor growth and development
- Learning difficulties
- Behavioural problems
- Obesity
- Type II diabetes
- Lethargy
- Iron-deficiency anaemia
- Preventable bone disease (e.g. Ricket's)
- Skin conditions such as eczema
- Constipation and/or diarrhoea
- Gastrointestinal upsets
- Recurrent colds or flu

A balanced diet rich in vitamins and minerals is crucial for the molecular functions carried out constantly in the body's cells and tissues. If healthy food choices are limited in the diet, the demand for energy will result in the consumption of calorie dense, nutrient poor foods. This in turn results in vitamin and mineral deficiencies which compromise cell and tissue function and lead to ill health.

BASIC NUTRIENTS IN A CHILD'S DIET

It is becoming increasingly apparent that diet affects not only a child's growth and development but also their cognitive ability. In children with poor nutritional status, improvements in behaviour and academic performance may be improved by correcting their diet. For example, thiamine treatment has been known to reverse aggressiveness in thiamine-deficient adolescents. Deleterious behavioural effects have been suggested for example, sucrose and additives were once suspected to induce hyperactivity, but these effects have not been confirmed by rigorous investigations. In spite of potent biological mechanisms that protect brain activity from disruption, some cognitive functions appear sensitive to short-term variations of fuel (glucose) availability in certain brain areas. A glucose load, for example, acutely facilitates mental performance, particularly on demanding, long-duration tasks. There is also growing evidence of the relationship between mental performance and eating habits. It is found that children who do not eat breakfast often have poorer results at school than they would with a healthy breakfast. Poor academic performance linked to nutrition can be seen from the effects of blood sugar fluctuations leading to impaired concentration, hunger and tiredness throughout the day.

The basic nutritional needs of healthy children are not the same as those of adults, however like adults, the standard nutritional advice for children is to maintain a balanced diet of grains, vegetables, fruit, dairy and meat or high iron and protein meat alternatives. The key is that each different food type will be rich in different nutrients and poor in others. By combining them, we get a balance of all nutrients.

Fat

Fat is a necessary nutrient in a child's diet. Fat helps provide extra calories and needed nutrients for active and growing children. No fat restriction should be applied to children below the age of two. For children over the age of two, fat intake should represent about 30 percent of the total calorific intake. As with the adult diet, limit foods high in saturated fats and cholesterol for children over the age of two. Help your child develop beneficial low-fat dietary habits such as drinking skim or low-fat milk instead of whole milk. Remember, these recommendations for fat intake are not for children under the age of two years or those children who have special dietary needs.

Carbohydrates

Carbohydrates are the staple nutrient source in the human diet in almost all cultures world wide. Grains, cereals, fruits, vegetables and increasingly, processed foods provide the bulk of carbohydrates in the diet, however, all carbohydrates are not equal. Carbohydrates may be simple sugars like glucose, sucrose and fructose, or more complex carbohydrates that make up our dietary fibre. Ideally, sucrose (table sugar) intake should be limited, it is the sugar that causes the most dramatic blood sugar fluctuations. Fructose and lactose found in fruit and dairy respectively are better than sucrose. Glucose and galactose are found in things like honey and are also a better alternative to sucrose. Dietary fibres on the other hand, are large, complex molecules which cannot be broken down by the human digestive system. They help make us feel full after eating, don't cause blood sugar spikes and serve a vital function in the bowel, preventing constipation and reducing the risk of diseases of the bowel. The carbohydrates in children's diets should come primarily from whole grains, fruits and vegetables. Processed, bleached white flours and grains lose many of the nutrients during processing and are much less nutritious, with less complex carbohydrate content than whole grains.

Sugary foods provide few nutrients and should be eaten on a limited basis if at all. Chewy, sticky, sugary foods may promote tooth decay as well as filling a child up without supplying other nutrients and causing fluctuations in blood sugar levels. Teach children to properly brush their teeth daily to help diminish this effect as healthy teeth are part of the digestion system.

Protein

In a healthy person, following a typical balanced diet, protein is generally not used by the body as an energy source. Protein is the last energy source of choice for the body, it is metabolised for energy only when the body has nothing else to use, when a person is starving for example. This is because the body has far more important uses for protein. It is crucial for cellular processes, for tissue development, growth, repair and maintenance. The body cannot maintain itself properly without protein, let alone grow and

develop and the rapid rates characteristic of childhood. Lack of dietary protein may lead to wasting conditions, where the body breaks down tissue, particularly muscle.

Micronutrients

Vitamins and minerals are important for the molecular processes in the body. Different micronutrients have anti-oxidant functions, assist in enzyme function, maintain electrolyte balance and allow processes like nervous system signalling and muscle contraction to take place.

KEY THINGS TO REMEMBER FOR CHILDRENS NUTRITION

- Source information from a variety of places and always look for factual evidence that supports comments and opinions
- Variety is everything. A diet that lacks variety will invariably lack some nutrients
- Parents and care-givers are the sources of nutritional habits and preferences. Children don't always do as you say, but toddlers do love to do what you do!
- Help children to feel involved in food choices and meal preparation. This stimulates an interest in different foods and in cooking and will provide a foundation for a healthy relationship with food.
- Don't introduce nutrient poor, calorie dense foods to babies and toddlers. What they don't know about, they won't want. Spend the first years of children's lives surrounding them with a variety of healthy foods.
- Ensure children are well hydrated. Don't wait until they ask for a drink, offer them water regularly.
- Small frequent meals are often better for young children. Don't serve large portions or force children to clean their plates.
- Fat is important in children's diets. Until at least the age of two, keep dairy products full fat.
- Get creative. Use cookies cutters to make interesting shapes with fruits, vegetables and sandwiches.
- Use different textures, temperatures and flavours.
- Persist with new foods but don't force children to eat what they truly dislike.
- Work hard early on to establish healthy habits and preferences, this lays a foundation which can help parents deal with the later impact of fast food advertising and peer pressure.
- Remember that poor nutrition can lead to illness, increased risk of a variety of diseases, lethargy, poor cognitive ability, behavioural problems and a variety of other conditions.

Nutrition tips for children

Breakfast

Like for adults, quite simply breakfast is the most important meal of the day, breakfast is literally a breaking of an overnight fast. Breakfast should provide energy and nutrients. Rich sources of fibre or protein are the best choices for breakfast as they provide a feeling of being full or satiated. The most common children's breakfasts are grain-based cereals and bread. Opting for wholegrain products over refined, and unsalted, no added sugar options, are positive choices. Meats may be included in breakfasts, however typically these are heavily processed meats or deli cuts such as bacon or sausage which may contain preservative and other ingredients that are best not given to small children. Better quality meat products of the same kind i.e. sausage can be selected with very little preservatives present.

It is generally suggested that the breakfast and lunch meals should be the heavier, larger meals of the day, with a lighter dinner. Other options such as egg dishes also make nutritious protein-rich breakfasts. Fruits make an excellent breakfast when mixed with cereal or blended with cereal into a smoothie. In general, cereal with milk, or toast with a spread is simply the fastest, easiest and most convenient mid-week breakfast. Many working parents, carers or families do not prioritise the time to make breakfast a meal time to sit down together.

Tips for nutritious children's breakfasts:

- Make sure cereals are whole wheat. Avoid sugary cereals which typically have little nutritional value and will leave a child hungry not long after the meal. Toast should also be wholegrain and not white. Good breakfast spreads include spreadable cheese and peanut butter. Honey is acceptable, but is high in simple sugars. If children like it, try offering it with peanut butter.
- Avoid processed meats – typically they are high in salt, sugar and other preservatives and also in fat.
- There is no reason why meat, warm vegetable or tofu dishes can't be served for breakfast if you have time. In western countries cereal has become the cultural norm for breakfast but in many countries other foods are eaten.
- A smoothie of fruit blended with muesli and milk can make a great breakfast on the run.
- Offer a fruit platter for children to choose items from.
- Make interesting breakfasts, layered yoghurt, fruit and muesli, for example, or whole wheat pancakes with fresh berries.
- Prepare the night before if you are able.
- Try to make breakfast a main daily meal, along with lunch. Place more importance on breakfast than any other meal.

Lunch

When children are young, the one major influence over behaviours and choices are parents or family, and so it is generally easier to instil good food habits. By the time children are in school, they are inevitably surrounded by other children who have access to alternative foods such as processed, convenience foods, lollies and bars. Such tempting food may make the nutritious lunch they have appear less appetising.

The key for lunch is that it should be considered as the second most important meal of the day. Lunch needs to provide energy for the rest of the day – that is for an afternoon of learning, sports activities and play. Lunch needs to be nutritious but not over filling.

Younger children generally need to nap after lunch. Children nap better when they have a full (but not overfull) stomach and feel satisfied. Foods high in simple sugars can leave children cranky and restless at nap time, and an overfull tummy can make them uncomfortable and restless also. Staples such as sandwiches or leftovers can make great lunches, if you stick to healthy whole wheat, low fat options.

Some suggestions include:

- Avoid white bread as it contains refined carbohydrates and low in fibre. Switch to wholemeal bread or wholegrain bread
- Switch from bread to whole wheat wraps and flat breads, or pita pockets
- Include protein to provide a feeling of fullness
- Include vegetable to increase daily servings
- Meat and salad sandwiches, homemade vegetable pizzas with a little low fat cheese, yoghurt with muesli and fruit puree, small filo pastries filled with lean meat and vegetables, sushi rolls, tubs of chicken salad with light dressing all make excellent and interesting lunch options
- Consider what the child ate at breakfast and plan to differentiate the nutrients consumed during lunch.
- Make the food look interesting and be creative. Packaged foods have ingredients that alter the colour, aroma and taste. You can do this naturally by combining interesting foods, cutting items into interesting shapes and providing lunches that don't deteriorate before lunch time.
- Store food properly. Bacteria thrives in warm temperatures and moisture. Seal containers and put an ice block in the lunch box to stop bacterial growth and prevent food poisoning
- Sweeter foods are not a bad option for school time meals and home lunches. Instead of a simple piece of fruit, why not try a rice cracker with low fat cream cheese, strawberries and a drizzle of honey. Cut up fruits or toasted flat bread and serve with a sweet yoghurt dip, make fruit kebabs and so on to create healthy sweet options.

- When your child is school aged they are old enough to have some general understanding of nutrition and food. Try to help them understand the benefit of healthy foods e.g. builds strong bones and teeth, help their brains develop so they can do well at school, gives them energy for play with their friends.
- When you are at home with children, consider having them assist in preparing a meal. Familiarity with food and confidence with food handling is an ideal way for a child to develop a positive relationship with food.

Dinner

Dinner is often the main meal of the day in Western countries. Increasingly, between extra-curricular activities for children, shift work and long hours, it has gone from a sit down family time, to a hurried event squeezed into the routine around other commitments. Turning dinner time into a routine, family event can assist in ensuring children eat their meal and enjoy it. Sitting in front of the TV with dinner promotes poor posture and if you are not concentrating on what you are eating, can often result in over-eating. It also means that the chance to wind down and enjoy time talking and socialising is lost.

Dinner is the perfect meal to introduce new foods to children, and to serve up buffet style meals and give children some control over their food choices. It can be a good time to talk about what you are eating and all the nutrients in the meal and how they are good for the children. One thing of key importance that is often overlooked with dinner is portion size. The old habit of serving up a large portion and expecting the child to clean their plate in order to be rewarding with a bowl of ice-cream presents a variety of problems, including over-eating, frustration with food, lack of enjoyment of meals and the development of poor eating habits and psychological problems with food, and the use of desserts as the yummy treat and the meat and vegetables as an obstacle to overcome in order to get the sweet treat.

Some ideas for children's dinners include:

- Provide a buffet. This sounds like a lot of work, but it doesn't have to be. You don't have to serve several different dishes, instead just keep items separate and give the child some freedom in the composition of the meal. Offer a meat, a couple of sauces, a couple of different vegetables and perhaps a carbohydrate like rice or pasta. This also helps children learn about portion sizes.
- Have children taste new dishes you prepare. If they dislike it, don't force them to eat it, but do continue to offer new and varied items regularly to increase the variety in the diet.
- Try to prepare disliked foods in different ways. Some children will have texture preferences with some put off by the way a dish appears or smells. Try baking, stir-frying, serving some items raw, or combining different ingredients and so on.
- As with all meals, if you can incorporate children in the preparation you will generally have more success with them eating the final product. You can dice vegetables and some cooked meat the night before and bring them out of the fridge for children to pick from to create their own pizzas. Keep control of the cheese quantity and let them have fun with the vegetables and herbs. Try pita bread, flat bread or even wholegrain bread as pizza bases, or make your own.
- Presentation. Try serving unfamiliar or less preferred items in a familiar way. A child may not eat spinach on its own, but a little mixed with low fat ricotta, grated leek or onion, pine nuts and sprinkled with some low fat grated cheese and served in a filo pastry shell to resemble a little pie may convince them to try it. Lots of vegetable filled pita pockets for children to pick from and eat with their fingers can be a good way to introduce new vegetables. Adding items to rice or pasta dishes or served with some other dish like noodles that the child likes can be a good way to introduce new foods also.
- Make dinner fun. Take advantage of the fact that toddlers love to mimic parents and want to like what their mum or dad do. First impressions are important with children, if they try something once and dislike it, you can have a tremendous amount of difficulty getting them to try again. Likewise, if they overhear a parent or carer discussing how they hate vegetables, they will often pick up on it and decide they don't either, and simply refuse to even taste even the most enjoyed items.

- Consider the priority your family places on dinner. After all, young children often head off to bed an hour or two after the meal. Enjoying heavier, bulkier foods for breakfast and lunch can be a good option for families. Children sleep better when not overfull, or upset over a frustrating dinner meal. A lighter meal will require less cooking and preparation time and you may be able to incorporate some preferred foods more readily, making the meal much more enjoyable.

SET TASK

Interview three parents regarding the diets of their children - they can be family or friends. Detail the children's ages, activity levels, and any other relevant information.

Ask questions relating to topics such as how many meals and snacks do they have, do they eat processed foods and if so why? What are the children's food preferences? What do the parents do to encourage healthy eating? How important do the parents feel diet is for children's well-being?

Find out what information the parents base their dietary decisions on. Seek general views on children's nutrition.