Heinz

In Touch

HEINZ NUTRITION FOUNDATION INDIA

VOLUME 15 | NUMBER 2 | JULY-SEPTEMBER 2013 | FOR PRIVATE CIRCULATION ONLY

Contents

MESSAGE FROM **MS. SEEMA MODI,**

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This issue of **In Touch** carries an article which has an important message not only to the practising doctor or nutritionist, but to the common man. The food we all consume has both macro and micro nutrients which are essential for normal growth and maintenance of a healthy body and mind. One of the major components of the food is carbohydrate. Over a period of time, we have learned that carbohydrates can be classified as simple and complex carbs. The dietician or a nutritionist would recommend us to eat plenty of the complex and only moderate amounts of the simple carbohydrates. The basis of this normal recommendation has an important science behind it. It is the rapidity at which the carbohydrate is metabolized into glucose, which has a direct impact on blood sugar which in turn determines whether it is a simple or complex carbohydrate.

The **glycemic index (GI)** provides a measure of how rapid is the rise of the levels of glucose in the blood after a particular type of food containing simple or complex carb is ingested. Carbohydrates that break down quickly called simple carbs, tend to have a high GI; while carbohydrates that break down more slowly called complex carbs tend to have a low GI. A lower glycemic index suggests slower rates of digestion and absorption of complex carbohydrates. It is generally believed that lower glycemic response usually demands lower levels of insulin. While a low-GI food will release glucose more slowly and steadily, which leads to more suitable postprandial blood glucose readings, there might be occasions where a high-GI food is required for energy recovery after exercise or for a person experiencing hypoglycemia.

While we should take caution and care to partake only low GI foods etc., people go the other extreme during pre-adolescent and adolescent periods, particularly beauty conscious persons, commonly seen to be affected with eating disorders leading to anorexia and bulimia as shown in the other interesting article in this same issue of **In Touch**.

Heinz Nutrition Foundation India takes this opportunity to wish all its readers the season's Greetings.

IMPORTANCE OF GLYCEMIC INDEX TESTING OF FOODS– INDIAN CONTEXT


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India has 62.4 million with diabetes and 77.2 million people with pre-diabetes indicating the need for urgent action to prevent and manage diabetes effectively . The increasing prevalence of diabetes in India has been attributed to changes in the qualitative aspects of diet on account of nutrition transition, increased urbanisation and globalisation. In this context, it is important to understand the quality of carbohydrates of Indian foods, since carbohydrates contribute the bulk of calories in the diet of an average Asian Indian.

Cereals contribute almost half of the total daily calories and two thirds of total calories derived from carbohydrates in Asian Indian diets. However, the cereals consumed today are highly refined and lack the health benefits of the traditional less refined grains. Also, grains like millets which used to be widely consumed in the not too distant past are now rarely used and that too only in certain restricted areas of India. Many studies from the West and a study conducted in Chennai by our group have shown the association between refined grain intake and risk of not only diabetes, but of the metabolic syndrome as well. This is because the carbohydrates from refined grains have high glycemic properties. When such refined grains are consumed as a staple in large quantities, the dietary glycemic load of the diet increases and further aggravates the risk. .

HISTORY OF GLYCEMIC INDEX (GI):

As long as a century ago, even before methods for measurement of blood glucose became widely available, researchers and clinicians were keen to know the influence of foods on blood glucose . Prior to 1920, the concept of simple sugars eliciting higher glycemic responses compared to complex carbohydrates was accepted. Allen and colleagues studied the glycemic effects of foods on the urine glucose levels, since the measurement of blood glucose was not performed routinely in those days . People with diabetes were advised to eat more complex carbohydrates such as starch rich foods, as it was believed that these forms of carbohydrates would get absorbed slowly when compared to the simple sugars, and thereby lead to a lower increment in blood glucose values. These were only assumptions; later on it was understood that different carbohydrate foods do have different effects on the levels of the blood glucose and that these effects could not be predicted by looking at the sugar or the starch content . However, a study by Jenkins et al from the University of Toronto in the late 1970s showed that the starch in potato raises blood glucose higher than does sucrose (table sugar). This led them to develop the concept of Glycemic Index (GI), which ranks food on a scale of 0-100 based on its ability to raise postprandial blood glucose .

GLYCEMIC INDEX (GI):

GI is only the means till date to describe the glucose-raising property of carbohydrates in the food. In the Indian context, testing GI of Indian food choices will therefore be very useful to rank the carbohydrate foods in the high carbohydrate Indian diets based on their glycemic effects.

WHAT IS GI?

- It measures the rate at which the foods get digested and converted to glucose
- The carbohydrate part of foods may either break down quickly during the process of digestion and result in high GI or break down slowly resulting in low GI

A typical glycemic response elicited by 50g available carbohydrate portion of a

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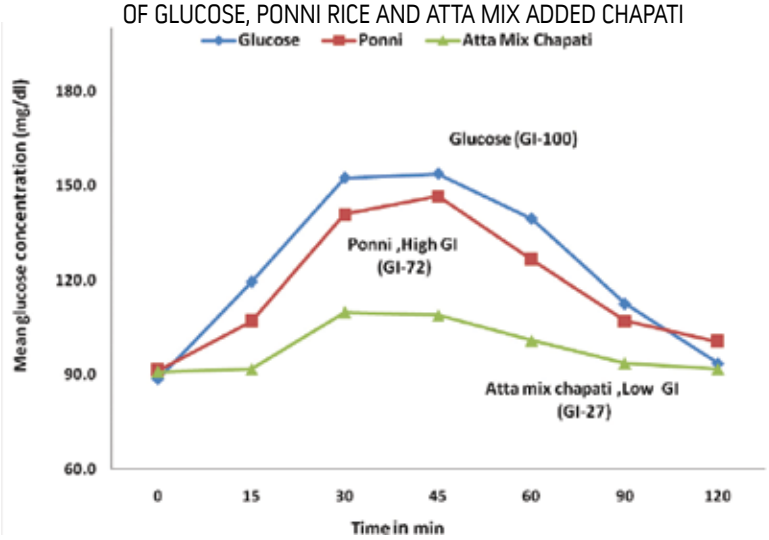
FIGURE 1: GLYCEMIC RESPONSES ELICITED BY 50G AVAILABLE CARBOHYDRATE PORTION OF GLUCOSE, PONNI RICE AND ATTA MIX ADDED CHAPATI



high GI food, and low GI food is shown in Figure 1.

DEFINITION OF GLYCEMIC INDEX (GI)

Glycemic Index (GI) is defined as "the percent of the incremental area under the blood glucose response curve of a particular portion of the test carbohydrate containing food elicited by comparing with the response elicited by the standard carbohydrate food (usually glucose) with same amount of the carbohydrate taken by the same subject."

MEASUREMENT OF GI

As per the protocol recommended by the WHO/FAO (1998), the fasting capillary blood glucose (CBG) is checked and the test food is administered, following which the CBG is measured every 15 minutes for the first hour and every half an hour for the second hour for both the reference food (usually glucose drink) and the food tested for GI. The measurement of GI is usually performed by capillary blood for the following reasons:

- Easy to draw the blood sample
- The rise in glucose levels is much higher in the capillary blood when compared to venous plasma, hence it is easy to determine the significance of GI as the difference in glucose levels elicited by the foods is larger.

FACTORS AFFECTING THE GI

Human subjects as well as food samples, all being biological in nature, are bound to have variation. This is the reason GI of foods has been categorised as low, medium and high (Low GI <54; Medium 55-69 and High>70). For example, GI of whole meal wheat bread with reference GI of white bread by many studies has been shown to be in the range of 91- 98 (all of which are high GI category) and this is acceptable as long as the variation does not misclassify the GI category of the food. However, a study from our centre on GI testing of same foods (sweet biscuit, sweet meal biscuit, malted whole wheat cereal, malted wheat cereal and cereal biscuit) performed among the same number of participants both from India and United Kingdom using uniform methodology showed a high glycemic response in Indians compared to their UK counterparts, though the GI values of these foods remained the same .

FACTORS		IMPACT ON GLYCEMIC INDEX
Nature of starch	Starch gelatinization	Increase in GI with increased starch gelatinization
	Amylose to amylopectin ratio	Increase in Amylose content will lower the GI
Type of sugar		Monosaccharide such as glucose will increase the GI Disaccharides (glucose + fructose) such as sucrose (table sugar) will elicit a lower glycemic response due to the presence of fructose which is absorbed as such
Fat		Presence of fat in the food decreases the gastric emptying rate , hence lowers the GI*
Water		Increase in water content could result in increased gelatinization of the starch and possibly higher GI.
Physical Entrapment		The cellular coat surrounding the grain and plant cell walls acts as a barrier inhibiting the access of digestive enzymes to the starch within grain thereby reducing the GI. Eg Whole grains
Viscosity of fiber		The soluble fibres with higher viscosity, slows down the interaction between the starch and the enzymes, thereby lowering the Glycemic index.
Particle size distribution		Finer the particle size, greater the digestibility, due to increased surface area for the digestive enzymes to act upon and hence resulting in higher GI. Example: finely milled flours
Presence of amylase inhibitors or Organic acids		Presence of amylase inhibitors and organic acids such as lactic acid and citric acid (example: Vinegar and lemon juice) decreases digestibility due to delayed gastric emptying rate and hence lowers the GI.
Method of food preparation		Dry heat method of cooking such as dry roasting or toasting may lower GI compared to moist heat methods such as boiling and steaming which increases gelatinization and hence GI
Degree of chewing		Bite size of the food is important. Compared to liquid foods, solid foods with optimal chewing will have lower digestibility and hence lower GI

CALCULATION OF GI

$$\text{GI value of test food (\%)} = \frac{\text{Blood glucose IAUC value of the carbohydrate portion (50g) in the test food}}{\text{Blood glucose IAUC value of the carbohydrate portion (50g) in the reference food (e.g. glucose)}} \times 100$$

It is however important to understand the variation in carbohydrate quality in the varied Indian food matrix (mixed meals and dishes). One should judiciously consider as what kind of foods are tested for GI. For example, testing GI of ice-cream, sugar-free chocolates and high fat milkshakes are inappropriate as these products are equally high in fat and it is well-known that fat delays gastric emptying rate. One should remember that in addition to GI, other factors such as fat content also should be considered for wholesome nutrition in the diet.

GI testing of foods is still useful despite controversies as there are no alternative tests available to measure the carbohydrate quality of food. This is especially important for the Indian staple foods that are high in carbohydrates.

GI OF INDIAN FOODS

Studies on glycemic index of Indian foods have been included in the international GI table . The major disadvantage with these values is that the methodology used to measure GI was inconsistent and most of these were published before 1998, the year when WHO/FAO published the standardised international GI methodology. Studies from our centre using the validated GI methodology have led to the publication of GI values for some selected Indian foods.

The GI of Atta mix roti and whole wheat flour roti were compared among a non-diabetic study population using a standardised protocol. The GI for the Atta mix, (a proprietary specialty food manufactured for diabetes management) added roti was found to be 27.3 as compared to roti's (whole wheat flour) GI of 45.1.Thus both the test foods were in the low GI category, selecting the Atta mix (ingredients- debittered fenugreek, chana dal and psyllium) added to whole wheat flour roti will further reduce not only the GI but also the GL .

Another GI study from our centre concerned three commonly consumed Indian rice varieties (sona masuri, surti kolam and ponni) all of which showed high GI (≥70), hence there is an urgent need to replace the refined grains (where all the micronutrients and dietary fibre are lost during milling) with whole grains such as brown rice where all the micronutrients and dietary fibre remain intact and contribute wholesome health benefits .

PHYSIOLOGICAL EFFECTS OF HIGH AND LOW GI FOODS

The possible physiological effect of high and low GI Indian food is illustrated in Figure 2.

The GI of Indian foods need to be looked at in the context of other aspects of a healthy diet like fat, salt and sugar content to describe the overall food score and based on this a list of healthier alternatives could be generated and can be used like menu card options for each of the Indian meals. For example, the south Indian cereal based breakfast staple idli which is a high GI food could be replaced with Dosa (oil free/ low fat), which is a medium GI food, a step that would reduce the dietary glycemic load (GL). GL can be reduced either by reducing the GI or the carbohydrate content. In the Indian context,

FIGURE 2: PHYSIOLOGICAL EFFECTS OF HIGH AND LOW GI FOODS

HIGH GI FOODS

EXAMPLE

Rifined cereals such as polished white rice

↓

Quickly digestible

↓

Fast absorption

↓

quick Rise in the blood sugar

↓

more Insulin demand

↓

Pancreas β cell exhaustion Glucose intolerance, Diabetes & heart desease

LOW GI FOODS

EXAMPLE

Brown rice, Sambar Rice (made with brown rice), White peas, Legumes

↓

Slow digestibility

↓

Slow Absorption

↓

gradual Rise in the blood sugar

↓

less Insulin demand

↓

Helps to prevent diabetes, heart diseases and obesity

TABLE 1. A SAMPLE HIGH AND LOW GI DIET PLAN

	HIGH GI DIET			LOW GI DIET		
	MENU	PORTION SIZE	GI	MENU	PORTION SIZE	GI
Breakfast	Idli-White rice	50 g	86	Idli brown rice-vegetables	50 g	68
	Onion chutney	25 g	43	Onion sambar	150 g	24
	Coffee with milk and sugar	150 ml	60	Coffee with milk and sugar	150 ml	60
Mid-Morning	Salted biscuits	5 g	85	Buttermilk	150 ml	36
	Coffee with milk and sugar	150 ml	60	White peas sundal	100 g	35
Lunch	White rice	250 g	83	Brown rice	280 g	59
	Sambar	150 ml	24	Sambar	150 ml	24
	Potato fry	150 g	73	Dal fry	150 g	24
Evening	Coffee with milk and sugar	150 ml	60	Coffee with milk and sugar	150 ml	60
	Samosa	100 g	83	Masala Vadai	30 g	10
Dinner	Utthappam- white rice	79 g	83	Dosa- Brown rice	30 g	62
	Kurma (Vegetable)	150 g	58	Mint chutney	25 g	27
Bed Time	Water melon	150 g	76	Apple	120 g	36
Average			**73**			**44**

it is challenging to reduce the carbohydrate content as we are accustomed to eating a diet rich in carbohydrate and hence altering GI is the more practical option. A sample Indian high and low GI diet menu is given in Table 1.

GLYCEMIC INDEX AND CHRONIC DISEASES

According to United Nations FAO/WHO 1998 report, the GI can be used as a tool in combination with information about the composition of foods to choose foods for better management and prevention of non-communicable diseases such as type 2 diabetes and cardiovascular disease . Obesity, CVD and diabetes are some of the non-communicable diseases which are on the rise and are associated directly or indirectly with GI.

Intake of high GI foods, by definition, elicits a high plasma glucose response. This in turn leads to increased output of insulin from the pancreas. Insulin is an anabolic hormone and can produce weight gain. Therefore it is not surprising that a high GI diet can, over time promote significant weight gain. The opposite is the case with low GI foods. Ludwig et al found that the rapid absorption of glucose after consumption of high GI foods results in a sequence of hormonal and metabolic changes resulting in early hunger phase, subsequently promoting overeating and thus increasing the risk of obesity .

Many prospective studies have demonstrated the effect of GI on the risk of type 2 diabetes. These studies have shown that prolonged consumption of high GI foods leads to increased prevalence of type 2 diabetes associated with metabolic syndrome , ,16 Our cross sectional study had also indicated that there was 2.5 folds increase in diabetes risk with higher GI diet compared to lower GI diet among Chennai urban adults17.High GI foods as daily choices of the diet are reported to increase the insulin demand, thereby leading to β cell exhaustion and possibly contributing to the development of type 2 diabetes.,

CONCLUSIONS

Over the past 20 years, the awareness about the health benefits of low GI foods is beginning to spread globally with many studies proving its impact on reducing the risk and facilitating the management of many chronic diseases such as diabetes, cardiovascular disease and obesity 18,19 . Hence there is an urgent need to bring awareness among all generations about introducing low GI foods in their lifestyle (replacing unhealthy foods with high GI). Considering the limited data on GI of Indian foods there is a great need to develop a national GI database so that the food industry researchers are able to identify the need for appropriate low GI foods in the market for the benefit of Indian consumers.

REFERENCES

1. Anjana, R. M., et al. "Prevalence of diabetes and prediabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical Research–INdia DIABetes (ICMR–INDIAB) study." Diabetologia 54.12 (2011): 3022-3027.

2. Radhika, Ganesan, et al. "Refined grain consumption and the metabolic syndrome in urban Asian Indians (Chennai Urban Rural Epidemiology Study 57)." Metabolism 58.5 (2009): 675-681.

3. Jenkins, D. J., et al. "Glycemic index of foods: a physiological basis for carbohydrate exchange." The American journal of clinical nutrition 34.3 (1981): 362-366.

4. Allen, Frederick M. "Experimental studies on diabetes series i. Production and control of diabetes in the dog. 2. Effects of carbohydrate diets." The Journal of experimental medicine 31.4 (1920): 381-402.

5. Brand MJ, Foster-Powell K, Colagiuri S, Leeds A (1996). The GI Factor: The Glucose Revolution. Griffin Press Pty Ltd: Netley, South Australia.

6. Jenkins, D. J., et al. "Glycemic index of foods: a physiological basis for carbohydrate exchange." The American journal of clinical nutrition 34.3 (1981): 362-366.

7. Mann, J., et al. "FAO/WHO scientific update on carbohydrates in human nutrition: conclusions." European Journal of Clinical Nutrition 61 (2007): S132-S137.

8. Henry, C. J. K., et al. "Glycaemic index of common foods tested in the UK and India." British Journal of Nutrition 99.4 (2008): 840-845.

9. Foster-Powell, Kaye, Susanna HA Holt, and Janette C. Brand-Miller. "International table of glycemic index and glycemic load values: 2002." The American journal of clinical nutrition 76.1 (2002): 5-56.

10. Radhika, Ganesan, et al. "Glycaemic index of Indian flatbreads (rotis) prepared using whole wheat flour and 'atta mix'-added whole wheat flour." British Journal of Nutrition 103.11 (2010): 1642.

11. Shobana, S., et al. "Glycaemic index of three Indian rice varieties." International Journal of Food Sciences and Nutrition 63.2 (2012): 178-183.

12. FAO/WHO (1998) Carbohydrates in human nutrition: report of Joint FAO/WHO expert consultaion. FAO Food Nutr Pap 66, 1-140.

13. Ludwig, David S., et al. "High glycemic index foods, overeating, and obesity." Pediatrics 103.3 (1999): e26-e26.

14. Salmerón, Jorge, et al. "Dietary fiber, glycemic load, and risk of NIDDM in men." Diabetes care 20.4 (1997 a): 545-550.

15. Salmeron, J., Manson, J.E., Stampfer, M.J., Colditz, G.A., Wing, A.L and Willett, W.C (1997 b). Dietary fibre, glycemic load, and risk of NIDDM in women. JAMA. 277, 472-77.

16. Hodge, Allison M., et al. "Glycemic index and dietary fiber and the risk of type 2 diabetes." Diabetes care 27.11 (2004): 2701-2706.

17. Mohan, Viswanathan, et al. "Dietary carbohydrates, glycaemic load, food groups and newly detected type 2 diabetes among urban Asian Indian population in Chennai, India (Chennai Urban Rural Epidemiology Study 59)." British journal of nutrition 102.10 (2009): 1498.

18. Jenkins, David JA, et al. "Effect of a Low–Glycemic Index or a High–Cereal Fiber Diet on Type 2 Diabetes." JAMA: the journal of the American Medical Association 300.23 (2008): 2742-2753.

19. Barclay, Alan W., et al. "Glycemic index, glycemic load, and chronic disease risk—a meta-analysis of observational studies." The American Journal of Clinical Nutrition 87.3 (2008): 627-637.

MINDING THE DIET OF ADOLESCENTS

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Adolescence is a very challenging period in human development, not only in terms of nutrition but also emotional development. It is the transition period from childhood to adulthood. Physiological and psychological changes influence the choice of foods. There is an increase in nutritional demands, which has to be met through a well-planned diet.

The diet needs to be balanced to avoid:

- Growth retardation
- Anaemia- Deficiency of Iron, Folate, B12
- Influence on academic performance
- Development of chronic metabolic diseases- Obesity, Diabetes and Cardiac problems

GROWTH SPURT

When teenage begins, the adolescent has already achieved 80-85 per cent of final height, 53 per cent of final weight and 52 per cent of final skeletal mass. Teens almost double their weight and add 15-20 per cent height. Girls often start their growth spurt by the age of 10-11 years and generally stop by the age 15, whereas boys begin at 12-13 years and generally stop by the age 19. Food intake changes, especially during growth spurt and physical maturation is mainly influenced by socio-cultural factors- adolescent eating pattern and behaviour. Age at menarche is inversely related to percentage of energy intake from dietary protein at age 3-5 yrs, fat intake at age 1-2 years and percentage of energy intake from animal protein at age 6-8 years. Girls who mature early may be prone to depression, eating disorders and anxiety.

EATING DISORDERS

Eating disorder is another common problem seen among adolescents which is a psychological disorder, characterised by abnormal or faulty eating habits. The most commonly seen eating disorder in young girls is Anorexia and Bulimia.

- ANOREXIA NERVOSA: It is a complex eating disorder, where the teens have a fear of weight gain and maintain an unhealthy weight, in terms of keeping herself thin. They restrict the amount of energy intake, increase the output of energy by exercising excessively and at times by induced vomiting.

- BULIMIA: Bulimics stuff themselves with food and force themselves to vomit the same or take laxatives to

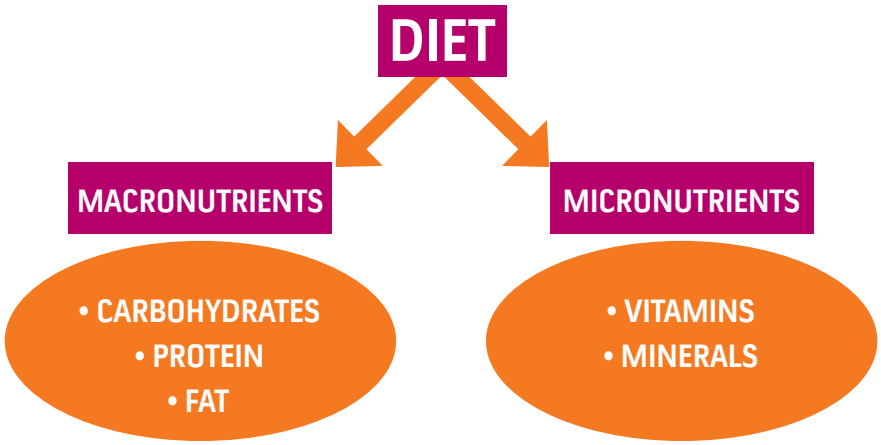
purge themselves. They periodically go on binges and vomiting, but do not starve themselves. They usually have unrealistic ideas about food. Damage to teeth, irritation of the throat, swollen salivary glands, oesophageal inflammation, and fluid and electrolyte imbalance are some of the common problems seen in this disorder.

Medical doctors, nutritionists, psychologists and fitness instructors should take a team approach to handle these disorders.

10-15 servings of carbohydrates per day can be given based on the gender and activity level. (1 serving-30 gm)

RECOMMENDED DIETARY ALLOWANCE

CATEGORY	ENERGY (kcal)	PROTEIN (g)	FAT (g)	CALCIUM (mg)	IRON (mg)
BOYS (13-15 yrs)	2750	54.3	45	800	32
GIRLS (13-15 yrs)	2330	51.9	40	800	27
BOYS (16-17 yrs)	3020	61.5	50	800	28
GIRLS (16-17 yrs)	2440	55.5	35	800	26



Based on the requirement of the nutrients they are classified as macro and micro nutrients.

MACRONUTRIENTS:

CARBOHYDRATE, PROTEIN AND FAT- Cereals, millets, pulses, legumes, fats and oils are the sources respectively. They also provide dietary fibre.

CEREALS AND MILLETS- They are the major source of carbohydrates. Rice and rice products, wheat and wheat products, bajra and bajra flour, ragi flour, jowar and jowar flour. Recipes made from refined flours can be taken in restricted quantity.

PULSES AND LEGUMES- Whole grams, dal, beans and its varieties, milk and milk products are sources of protein in a vegetarian diet. Egg, poultry and meat

products are non-vegetarian sources of protein. Two servings of pulses/animal foods per day are advised. Animal foods can be taken weekly twice or thrice. (1serving-30 gm).

FAT- Fats like ghee, butter and cooking oil are good sources of fat. Dairy products such as cheese, whole milk/full cream milk also

provide fat in the diet. They are required for absorption of fat soluble vitamins and other biochemical functions.

MICRONUTRIENTS:

VITAMIN AND MINERALS:

Fruits and vegetables are the sources of vitamins and minerals. Seasonal fruits and vegetables are always advised. Whole fruits or cut fruits and vegetables in large quantities. Cooked vegetables, usili (vegetable with dal preparation), salad, homemade soup, stewed fruits and fruit custard are some of the recipes that can be given to adolescents.Vitamins like A, B, C, D, E, K and minerals like iron, calcium, magnesium, iodine, which are required in maintaining health are provided by proper consumption of fruits and vegetables. Increased tissue growth calls for extra requirement of vitamins and minerals.

Dietary intake and body size influence age at menarche and growth patterns in teen girls. Along with good diet, good physical activity is also needed. Children of this age can engage in playing outdoor games like running, jogging, skipping, sports like kho-kho, kabadi, volley ball, throwball, etc and involve themselves in cultural activities like dancing, singing, playing instruments, painting and other artistic works. Thus balancing food and physical activity will help them concentrate in their studies.

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NUTRITIONAL CHALLENGE DURING ADOLESCENCE

Adolescence is the most crucial period in human development and offers a good chance to ensure healthy adult life through ideal nutrition. Not only would it avoid growth retardation, anaemia and poor school performance but also metabolic syndrome resulting in obesity, diabetes and cardiovascular diseases. With high prevalence of diabetes in India, it is essential to understand nutritional intervention necessary to prevent and control diabetes. Glycemic index of food is the major consideration for effective control of blood sugar in healthy and diabetic population. This issue of In Touch deals with these two important problems related to nutrition. Both the experts have made the concepts clear and I am sure readers will find information useful for implementation in their practice.

WORKSHOP ON CLINICAL NUTRITION

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The Department of Dietetics, Indraprastha Apollo Hospital, New Delhi and the Centre for Research on Nutrition Support Systems (CRNSS), New Delhi jointly conducted a Workshop on Clinical Nutrition on May 18 and19th, 2013 at the auditorium, Indraprastha Apollo Hospital, New Delhi.

The scientific programme of the workshop was structured and subsequently finalised jointly by Dr. Sarath Gopalan, Executive Director, Centre for Research on Nutrition Support Systems and Deputy Director, Nutrition Foundation of India, New Delhi who was the organiser of the workshop jointly with Dr. Bhuvaneshwari, Group Chief Dietitian, Apollo Hospitals. It was a one and a half day workshop, which was attended by various dieticians and nutritionists from all over India. The strength was more than 150.

An important feature of this workshop was that every topic in the scientific programme had a clinician's perspective (presented by a clinician specialising in the area) and a nutritionist's perspective (presented by a nutritionist with special expertise in the area). The issues addressed in the workshop pertained to nutrition intervention in the hospital setting and covered specific areas such as nutrition in liver disease, chronic kidney disease, nutrition in the morbidly obese patient undergoing bariatric surgery and nutritional intervention in children with inborn errors of metabolism. There were more than 100 participants at the workshop and it was much appreciated by the delegates based on the response from the feedback form.

Since physicians, dieticians and nutritionists work in tandem to effectively treat the various diseases in adults and children, this workshop was beneficial to all the participants. The presentation made by the eminent dietician and doctors has left a powerful impression on the whole. The recent developments on inborn errors of metabolism were widely discussed and valuable information on recent research was imparted. Various other topics of general diseases prevalent in the society were reviewed and valuable solutions were suggested. Questions from the audience were tackled by the concerned doctors and senior dieticians.

At the end of the session, the audience feedback was taken. It was very encouraging and the good attendance showed the path to organise such events more frequently in future. This kind of a programme needed a lot of organisational and physical help which was rendered by the marketing department of Apollo Hospitals, a strong team of dieticians and interns at Indraprastha Apollo Hospital.