



SLMNA NEWSLETTER

SRI LANKA MEDICAL NUTRITION ASSOCIATION OFFICIAL NEWSLETTER

Linking nutrition research to practice...

THIS MONTH'S FEATURED ARTICLES

- Capture of the month
- Article of the month
Influence of diet on fertility
- Food of the month
Fenugreek
- Past Events
- Upcoming Events



Message from editors...

World food system - Major challenges and solutions

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life." (World Food Summit, 1996). If we achieve the main purpose of the world food system, what kind of world would we see? A world where food is adequately supplied and hunger is entirely eliminated. However in reality what we see is that millions of people are starving with no access to food, and 16.6% percent of people are malnourished.

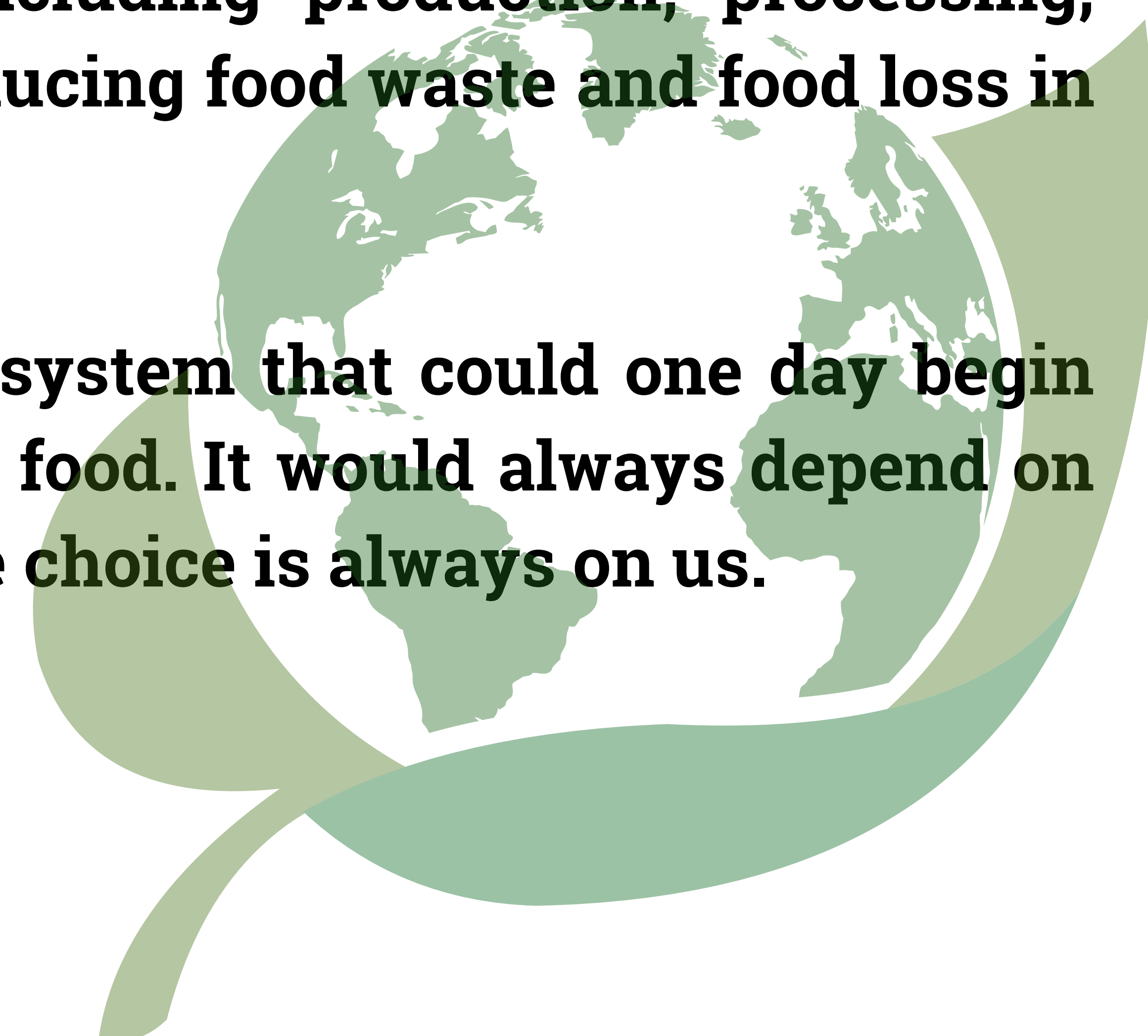
What are the major challenges of the world food system? Providing sustenance of food to all human beings is one of the major challenges. Rapidly increasing population, environmental setbacks, poor agricultural practices, impacts of biofuel production, food loss, waste, climate change, and food crises such as poverty, war, economic fluctuations, natural disasters, and pandemics have all contributed. Therefore, it is important to dive into some of the specific challenges and see how we can go for a better future. Our primary purpose should be to reduce food insecurity and food crisis, improve farming practices and decrease food loss and food waste.

We can begin to make a change by introducing "good practices" like changing the way we treat the soil, preserving our ecosystem, taking care of the water, energy, and land resources, keeping the harvesting, processing, and distribution and using the land and resources more efficiently. Consumer also should be responsible in their food choices such as moving into more home gardening, selecting crops from own geography as well as seasonal food and eating less meat. This support the local small farmers to a great extent since smaller farms can keep the soil chemical-free, rotate the crops and grow multiple crops since their interest is not massive production and massive income. Raising awareness within every level of the supply chain, including production, processing, distribution, consumption, and disposal, is crucial for reducing food waste and food loss in the long run.

Accordingly, we can construct a new, better world food system that could one day begin feeding every single hungry belly in the world with safe food. It would always depend on the direction we take. And we should never forget that the choice is always on us.

Until next time,

Dr.Gayathri and Dr.Nishanthika



CAPTURE OF THE MONTH



“ Keep your face to the sunshine, and you cannot see the shadow”



Influence of diet on Fertility

By Dr. W.P.H.P. Karunarathne

Infertility is becoming a huge burden in the world. One in every four couples has been found to be affected by infertility according to WHO statistics. Around 48 million couples and 186 million individuals are suffering from infertility globally.

Definition of infertility

“Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse.” (WHO)

- Primary infertility - when the person has never been pregnant
- Secondary infertility - when the person has at least one prior pregnancy

Causes of infertility: Female factors

- Tubal disorders- blocked fallopian tubes as a result of sexually transmitted infections or complications of unsafe abortion, postpartum sepsis, or abdominal/pelvic surgery
- Uterine disorders - Endometriosis, congenital anatomical abnormalities (eg: septate uterus), or benign tumors (eg: fibroids)

- Disorders of ovaries - Polycystic ovarian syndrome and other follicular disorders
- Disorders of the endocrine system/imbbalances of reproductive hormones -Pituitary cancers, Hypopituitarism, Hypothyroidism

Causes of infertility: Male factors

- obstruction of the ejaculatory ducts, and seminal vesicles causing problems in the ejection of semen. The blockage is caused by injuries or infections of the genital tract.
- Hormonal disorders - abnormalities in hormones produced by the pituitary gland, hypothalamus, and testicles. (pituitary or testicular cancer)
- Testicular failure to produce sperm - due to varicoceles or medical treatments like chemotherapy that impair sperm-producing cells.
- Abnormal sperm function and quality - abnormal morphology and motility of the sperm (anabolic steroids can lead to abnormal sperm count and shape)

Causes of infertility: Environmental and Lifestyle factors

- Smoking
- Excessive alcohol intake
- Obesity
- Exposure to environmental pollutants

Dietary Factors that improve fertility in women and men

- Low levels of folate are associated with sporadic anovulation. Women who are taking 400mcg of folic acid for 3 months have a 26% chance of getting pregnant compared to women not taking folic acid. Higher levels of pre-pregnancy folate level lower the risk of spontaneous abortion and neural tube defects in the fetus. Intake of folic acid supplements is important for the greater success of infertility treatments.
- Vitamin B 12 is an important nutrient in fertility.
- Full-fat dairy products are also good to lower the risk of ovulatory infertility. Low-fat dairy products (skim and 2% milk, yogurt, or cottage cheese) increase the risk of infertility. (according to NHS2



- Women who consumed high amounts of 'junk food' take longer duration to conceive.
- Couples consuming seafood are conceived sooner than those who rarely consume seafood.
- Effect of alcohol, caffeine, and soft drinks like carbonated beverages (Soda) intake on fertility is not found clearly.
- High consumption of sugar, sweets and sweetened beverages reduces semen quality. Thus, increasing the risk of infertility among men.
- Vitamin D has no important role in fertility.
- Antioxidant supplementation doesn't have any benefit in treating infertility in females. But it is beneficial for the male partner as it improves male fertility.
- There is a rough "J" shaped relationship between BMI and fertility. The risk of infertility is highest among those at the lowest and highest ends of the BMI distribution. A higher risk of ovulatory disorder infertility is found to have in underweight and obese females.
- Male obesity is associated with endocrine dysfunction which increases the risk of infertility.
- Obesity is associated with a significantly greater risk of failing ART (Assisted Reproductive Technology).
- Engaging in physical activity adequately, reduce the risk of ovulatory disorder infertility.



Addressing infertility is important because,

Every person has a right to enjoy life with the maximum standard of physical and mental health.

Couples have the right to decide the number, timing, and spacing of pregnancies.

Infertility can affect these human rights. Therefore, addressing infertility is important.

Why a nutrition guideline is important

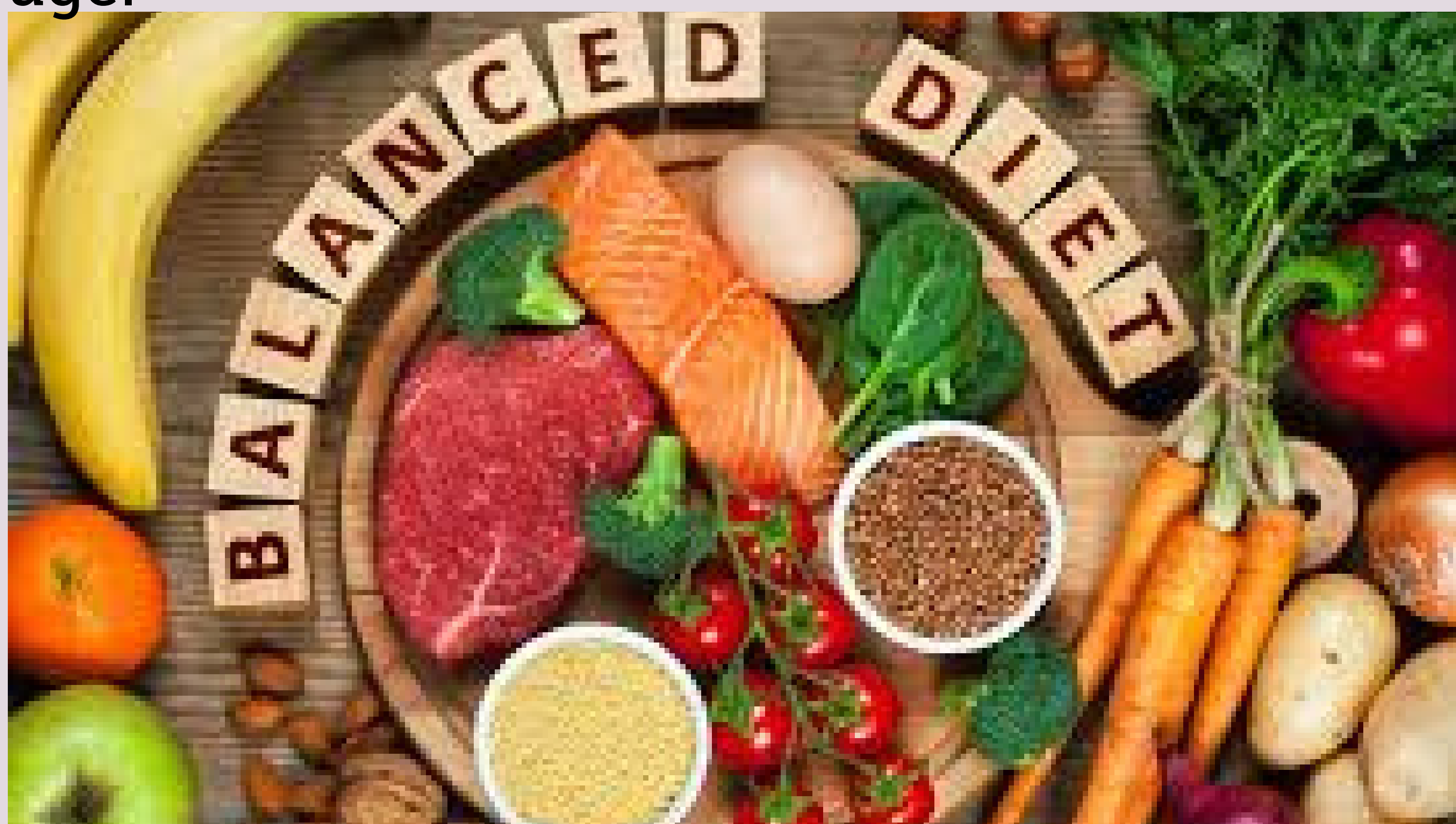
The experience of infertility impacts the physical, psychological, and economic well-being of the couples.

The incidence of infertility is rising despite the development of assisted reproductive technologies (ART). There is more research, aimed to identify modifiable risk factors for subfertility. Nutritional factors have been identified as modifiable risk factors in most of the research. Evidence suggests that nutrition can play a key role in altering fertility in both men and women.

Clinical treatment for subfertility is influenced by diet and BMI.

Many studies had found that healthy dietary practices among both men and women of reproductive age have an important effect on fertility.

Thus, it is worth incorporating nutrition advice into both clinical guidelines for infertility as well as national dietary guidelines for individuals of reproductive age.



Dietary Factors which improve fertility in women and men

- American Diabetes Association recommends consuming plenty of whole grains, monounsaturated or polyunsaturated oils, vegetables, fruits, and fish to have higher-quality sperm and ovum.
- Plant protein from vegetable sources, full-fat dairy foods, iron, and monounsaturated fats consumption during the preconception period reduce the risk of infertility due to ovulatory disorders by 66% and infertility due to other causes by 27% according to Nurses' Health Study (NHS2.) Further, this study shows that not following the "fertility diet" was the main factor in 46% of cases of infertility.
- Mediterranean diet (which recommends a high intake of vegetables, fish, and polyunsaturated fats) lowers the risk of infertility by 44%.



The above evidence suggests the contribution of dietary factors to reduce the risk of fertility problems and the contribution to enhance fertility in the general reproductive-aged population. Dietary management is likely to be central in fertility treatment. Therefore, it is important to introduce dietary counseling into treatment packages for infertility and introduction of specific dietary guidelines for individuals of reproductive age when developing national nutritional guidelines to enhance fertility.

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Fenugreek as a functional food and its nutraceutical potential

By Dr. G. Nanayakkara

Medicinal compounds made out of plants were used by cultures for a long period of time due to their health benefits with minimal side effects. Fenugreek is one such leguminous herb and spice scientifically known as *Trigonella foenum-graecum* which belongs to the family Fabaceae. It is native to Eastern Europe and Asia and cultivated throughout the world. Especially in India and North African countries. India produces the majority of fenugreek in the world and is also the main consumer of its usage as a food, spice as well as a medicine. Many studies have shown the potential of fenugreek as a functional food and nutraceutical.



Fenugreek seed increases the sensory quality of food. They give a characteristic flavour, aroma, colour and modify the texture of food. It is also used in preparing soups and pancakes. Fenugreek seeds are known as medicine since ancient times. Fresh or dried fenugreek leaves and tender stems are used as green leafy vegetables (included in the Indian food composition table).



The mature fenugreek seed contains amino acids, fatty acids, vitamins, and saponins such as diosgenin, gitogenin, neogitogenin, homoorientin saponaretin, neogigogenin and trigogenin, fibers, flavonoids, polysaccharides, and alkaloids like trigonelline and choline.

Fenugreek is popular for its multiple pharmacological properties. It has anti-diabetic, antioxidant, hypocholesterolemic, hypotriglyceridaemic, antineoplastic, anti-inflammatory, antiulcerogenic, antipyretic, immunomodulatory, and anticarcinogenic effects.

Other pharmacological effects include hepatoprotective, antibacterial-antifungal, antilithogenic, gastric stimulant, and galactagogue effects. The polyphenolic flavonoids of fenugreek exhibit the most common properties like antidiabetic, hypocholesterolemic, hypotriglyceridemic, and antioxidant effects.

Steroid saponins are anti-inflammatory. They also have uterine and lactation-stimulating properties. Galactomannan is a polysaccharide that has antidiabetic effects. Amino acid 4-hydroxy iso-leucine acts similarly to insulin. The unsaponifiable portion contains the lactation-stimulating factor.

Fenugreek plant



The fenugreek plant is an erect annual herb. It has trifoliate leaves. It reaches a height of 0.3–0.8 m. The flowers are white or yellow. They give rise to 3-15cm long, slender, yellow to brown pointed-beaked pods. These pods contain 10–20 greenish-brown seeds. When matured, the seeds become hard and brown. Green leaves are harvested usually at the 3 or 4-leaved stages. After 30–35 days of flowering or, 155–165 days after sowing, seeds can be harvested.



Nutrition facts given by USA Department of Agriculture, for 1 teaspoon or 3.7g of fenugreek seeds is listed below.

Constituent	Amount (per tsp/3.7g)
Calories	12kcal
Magnesium	7mg
Protein	0.85g
Phosphorus	11mg
Total fat	0.24g
Potassium	28mg
Carbohydrates	2.16g
Zinc	0.09mg
Total dietary fiber	0.9g
Vitamin C	0.1mg
Cholesterol	0 mg
Thiamin	0.012mg
Sodium	2mg
Riboflavin	0.014mg
Calcium	7mg
Vitamin B6	0.022mg
Iron	1.24mg
Niacin	0.061mg
Folate, DFE	2µg
Vitamin A	2 IU

Table 1 - Composition of fresh fenugreek leaves and mature fenugreek seeds (Values are given for 100g of Fenugreek seeds and leaves)

Component	Fresh fenugreek leaves	Fenugreek seeds
Moisture	86.0 g	
Protein	4.4g	30g
Fat	1.0g	7.5g
Fiber	1.0g	50g
Sapogenins		2g
Trigonelline		380mg
Ca	395mg	160mg
Mg	67mg	160mg
P	51mg	370mg
Fe	16.5mg	14mg
Na	76mg	19mg
K	31mg	530mg
Cu	0.26mg	33mg
S	167mg	16mg
Cl	165mg	165mg
Mn		1.5g
Zn		7.0mg
Cr		0.1mg
Choline	1.35g	50mg
Vitamin C	52mg	43mg
β-Carotene	2.3mg	96 µg
Thiamin	40 µg	340 µg
Riboflavin	310 µg	290 µg
Nicotinic acid	800 µg	1.1mg
Folic acid		84 µg



Fenugreek Fiber

Fenugreek has soluble fiber and insoluble fiber. 50% (w/w) of the dry weight of fenugreek seeds is fiber. About 30% of the seed is gel-forming soluble fiber. The insoluble fiber constitutes 20% of fenugreek seed.

The fiber of Fenugreek seeds is stable and can withstand processing like frying, baking, cooking, and freezing. Minor modifications in the physical conditions with processing give fiber, distinct water absorption properties and therefore can be made into jelly, spreads, and also as a thickener.

By fortifying flour with fenugreek powder, we can increase the total dietary fiber intake in the diet. The Recommended Daily Allowance for dietary fiber is 20–30 g. It can be added to soups, beverages, and sauces. Fenugreek powder rich in fiber added to refined flour has been used to prepare foods like pizza, muffins, bread, pancakes, cakes and etc.



Fenugreek Saponins and Alkaloids

Fenugreek consists of 4 to 8% saponins and 1% alkaloids. They contribute to bitterness, increased acidity of the stomach, and gastric stimulation. Diosgenin, the main sapogenin, is an estrogen precursor. Therefore, can be beneficial in managing menopause. Saponins induce testosterone release in males, increase secretory functions, and induce uterine contractions in females. For this reason, fenugreek extract and leaf must be contraindicated in women during early pregnancy and during menstruation to reduce excessive bleeding.

Saponins can reduce cholesterol. This happens through hormone synthesis without effect on triglycerides. Trigonelline, an alkaloid, reduces glycosuria in diabetes. The steroidal saponin diosgenin can be used to manufacture pharmaceuticals, like progesterone. Trigonelline is converted into niacin when the seed is roasted which is nutritionally beneficial.



Safety of Fenugreek Consumption and potential side effects

Most of the side effects known are user-reported symptoms including diarrhea, stomach upset, or bloating in animal studies. The serious side effects include signs of hypoglycemia. Therefore, patients who take oral diabetic drugs or insulin should be monitored while consuming fenugreek. A serious allergic reaction to fenugreek is rarely seen. Fenugreek has the potential to increase bleeding risk because it contains coumarins-like substances. Fenugreek may reduce the potassium level in the blood and may alter the thyroid hormone level. Using fenugreek seeds in pregnancy has been associated with congenital malformations like anencephaly, hydrocephalus, and spina bifida

Health Benefits of Fenugreek

Antioxidant Effects of fenugreek



Oxidative damage is the major reason for diseases like diabetes, cardiovascular diseases, inflammatory diseases, aging, and carcinogenesis. Reactive oxygen radicals damage cells at the membrane and chromosomes. Fenugreek seed reduces lipid peroxidation and reduces alterations in the antioxidant molecules, such as glutathione, α -tocopherol, and β -carotene in diabetic rats. Increased lipid peroxidation and increased oxidative stress associated with the depletion of antioxidants in the kidney, liver, and pancreas were observed in diabetic rats. This was normalized by treating with fenugreek seed.



Anti-diabetic effect of fenugreek

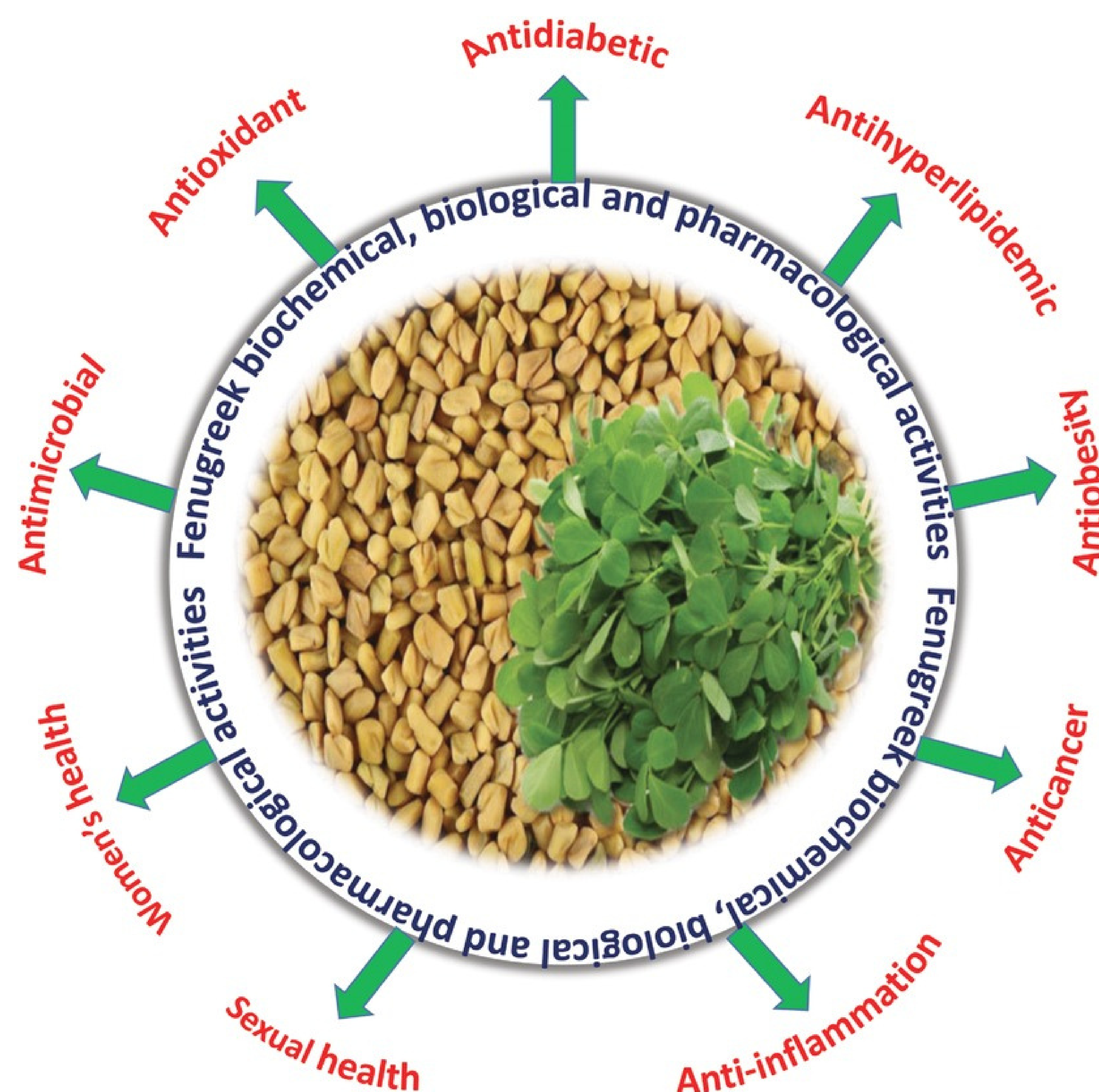
The fiber in fenugreek delays gastric emptying and suppresses the release of insulinotropic hormones and gastric inhibitory peptides. The post-prandial glucose peak is reduced and prolonged with fiber. Polysaccharides such as galactose and mannose in fenugreek seeds are anti-glycemic and anticholesterolemic. Galactomannan in soluble fiber has been shown to reduce postprandial blood glucose. Trigonelline present in fiber, an alkaloid, can reduce glycosuria. It significantly reduces blood glucose and improves glucose tolerance.



Abeysekara et al., 2018, showed that fenugreek seed extract exhibits glycation-reversing activities and anti-glycation in the BSA glucose glycation model adding to its therapeutic potential. Since fenugreek seeds are a good source of protein, they can be consumed as pulses in diabetic diets. Thus, Fenugreek included in the daily diet can be beneficial in the management of diabetes.

Hypocholesterolemic and hypotriglyceridemic effects of fenugreek

Fenugreek has been shown to be hypocholesterolemic in animal studies as well as in clinical trials. Significant reduction of blood cholesterol and triglycerides has been seen in both insulin-dependent and noninsulin-dependent diabetic subjects and in diabetic rats following fenugreek seed intake. Consumption of germinated fenugreek seed powder by human subjects also resulted in hypocholesterolemia. The hypocholesterolemic effect of Fenugreek happens through increased excretion of fecal sterols and bile acids. Fenugreek also stimulates bile formation in the liver and converts cholesterol to bile salts. Cholesterol stores in the liver are also reduced by fenugreek.



Other benefits of fenugreek

Fenugreek ingestion showed to decrease dietary fat intake in healthy volunteers. A study showed that it caused a modification of feeding behavior in humans, beneficial in lowering weight.



Fenugreek powder containing flour is used to bake bread, cakes, muffins, pizza, and other bakery foods. Fenugreek can be utilized as functional food improving the nutritional value of commonly consumed food items. Substitution of wheat flour with fenugreek flour by 5–20% increased the fat, protein, minerals, lysine, and dietary fiber content. Germinated fenugreek flour has the best nutritional quality.



Modulation of the immune system is important in cancer, diabetes, arthritis, allergies, and other autoimmune diseases.

Treatment of mice with fenugreek extract demonstrated a significant increase in immunomodulatory effects. Delayed type of hypersensitivity response, phagocytic index, and phagocytic capacity of macrophages changed as well as lymphocyte proliferation assay.

Fenugreek is contraindicated in pregnancy. It is believed to cause abortion in Ayurveda. Post-partum women are traditionally given fenugreek seeds for their galactagogue property. However, due to its uterine stimulation quality, which may be the cause of contraindication during pregnancy, the seeds are considered useful at childbirth. Uterine and lactation-stimulating properties of fenugreek are shown to be due to steroids like saponin. Although fenugreek seeds are known to enhance breast size, their oestrogen effect is not known. Fenugreek seed extracts stimulated the proliferation of breast cancer cells, MCF-7. It also induced the expression gene pS2 in MCF-7 cells which are oestrogen responsive.





Other benefits of fenugreek

- Fenugreek shows a growth-promoting effect. Saponin I and dioscin in fenugreek increase the release of rat growth hormone from rat pituitary cells. Fenugreek can be used to enhance endurance and strength in healthy individuals.
- The gastroprotective effect of fenugreek seeds has been shown in a study on gastric ulcers. The cytoprotective effect of the seeds is due to the antisecretory action and effects on mucosal glycoproteins. Fenugreek seeds contain substances that stimulate the pancreas to release digestive enzymes, which aid digestion. The soothing effect of the seeds is beneficial in gastritis and gastric ulcers.
- Fenugreek stimulates bile acid secretion and bile flow rate and increases pancreatic lipase activity and pancreatic amylase activity in studies. Chymotrypsin activity was also increased in animals who were fed with fenugreek. Stimulation of the liver to produce and secrete more bile rich in bile acids and appropriate stimulation of activities of pancreatic lipase and chymotrypsin are the reasons for digestion-stimulating properties. The fiber, saponins, and flavonoids in fenugreek seeds modulate the activities of β -glucuronidase and mucinase and inhibit colon carcinogenesis.
- Fenugreek seed extracts lowered the L-thyroxine-induced hyperthyroidism in a rat model

In conclusion, several health benefits of the spice fenugreek, have been experimentally shown in recent years. Fenugreek has the potential to be used as a therapeutic application. Both animal and human studies, which have evidenced the health benefits of fenugreek have used a high level of fenugreek, 50 to 100 times the normal intake level. Dietary levels are possible only through food items prepared using large amounts of fenugreek seeds. The liberal consumption of fenugreek has been proven to be safe and it is possible to implement its use to derive health benefits through its rich fiber content and other bioactive components.



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Past events since last publication

Annual General Meeting of SLMNA

The Annual General Meeting of SLMNA was held on 28th of January 2023 at the Neurotrauma auditorium of National Hospital of Sri Lanka, Colombo. New council was appointed.

CONGRATULATIONS!!!

Dear members of 8th council of Sri Lanka Medical Nutrition Association who were elected at the Annual General Meeting held on 28th of January 2023 at Neurotrauma auditorium-NHSL.



SRI LANKA MEDICAL NUTRITION ASSOCIATION



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Past events since last publication

Annual General Meeting of SLMNA

CONGRATULATIONS!!!

Dear members of 8th council of Sri Lanka Medical Nutrition Association who were elected at the Annual General Meeting held on 28th of January 2023 at Neurotrauma auditorium-NHSL.

Council Members



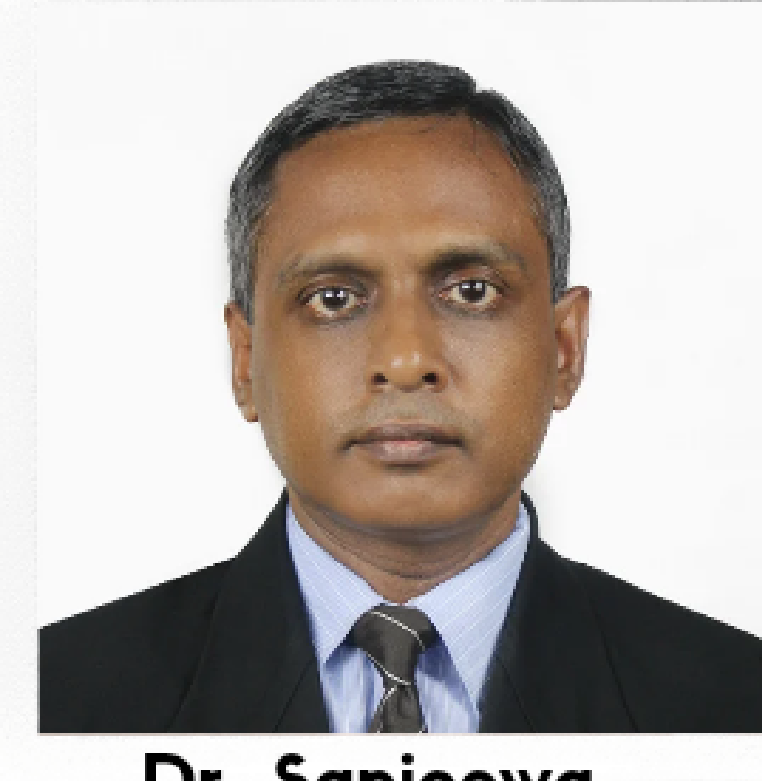
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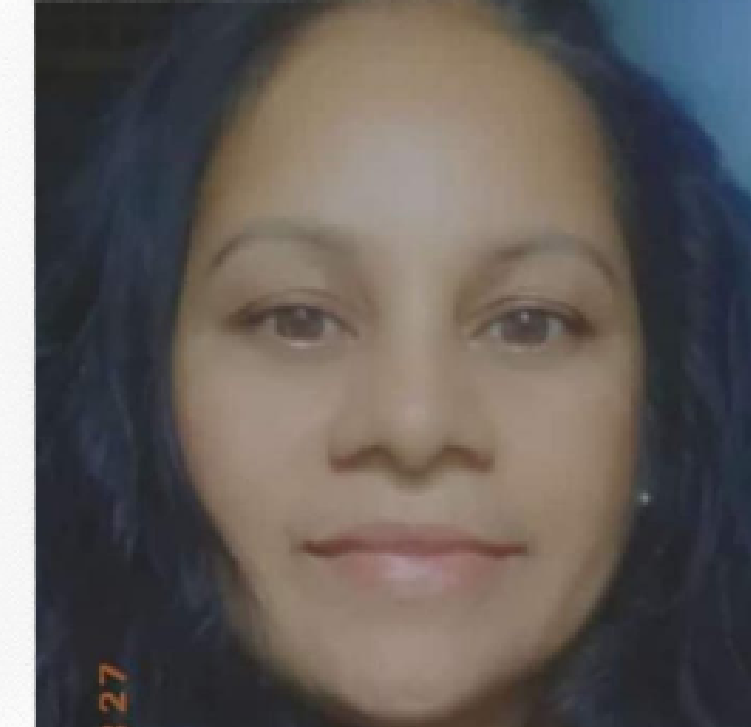
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Dr.Rasika Siriwardhana



Dr Kamalaseeli
Vithanage



Dr. Hemalee Ranatunga

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Past events since last publication

Annual General Meeting of SLMNA

THANK YOU!!!

Dear members of 7th council of Sri Lanka Medical Nutrition Association for your dedication and hardwork...

Sri Lanka Medical Nutrition Association – 2022



Seated (left to right) Dr. Ruwan Dissanayake, Dr. Sanjeewa Godakandage, Dr. Marie Fernando, Prof. Pujitha Wickramasinghe (Vice President), Prof. Ranil Jayawardena (Vice President), Dr. Renuka Jayatissa (President), Prof. Upul Senerath (Vice President), Dr. Kamalaseeli Vithanage (Secretary), Dr. Prasad Katulanda, Dr. Hemalee Ranatunga (Treasurer)

Standing (left to right) Dr. Nalinda Herath (Co-opt member), Dr. Jayani Thennakoon, Dr. Dhaneshi Hettiarachchi (Co-editor), Dr. Uthpala Hiripitiya (Asst. Secretary), Dr. Chapa Wijesena (Co-editor), Dr. Menaka Kottage (Social Secretary), Dr. Sampath Jayawardhana, Dr. Ahmad Rushdi, Dr. Sajitha Mallawaarachchi (Co-opt member), Dr. Janaka Marasinghe, Dr. Sajid Nassim (Co-opt member), Dr. Erandi Ubayanarayana, Dr. Thimathi Wickramasekara, Dr. Shaima Rafeek (Asst. Secretary), Dr. Chandima Hathurusinghe, Dr. Malika Udagedara, Dr. Shalika Kurukulaarachchi (Co-opt member)

Past events since last publication

SLMNA Monthly Council Meetings



SLMNA monthly council meeting was held on 3rd of February 2023 at the Medical Nutrition Unit of National Hospital of Sri Lanka, Colombo as a hybrid event through the zoom platform.

Past events since last publication

Symposium on Malnutrition

Organisation of Professional Associations of Sri Lanka

Symposium on Malnutrition

10th Feb. 2023 (Friday)

6 p.m. to 8 p.m. at OPA Auditorium

Organized by Health and Nutrition Committee - OPA

Keynote Speaker
Combating Childhood Malnutrition - Multi Sector Approach
Professor Pujitha Wickramasinghe
Senior Professor,
Department of Paediatrics
Faculty of Medicine,
University of Colombo
President
Sri Lanka Medical
Nutrition Association

Panelists

Dr. Timathi Wickramasekara
President
Sri Lanka College of
Nutrition Physicians

Dr. Mahendra Arnold
President
College of Consultant
Community Physicians

Speakers

Topic : Public Health Strategies to Combat Malnutrition
Dr. Lakmini Magodaratna,
Director Nutrition, Ministry of Health

Topic : Nutrition Strategies to Combat Malnutrition
Dr. Jayani Tennakoon Jayaweera
Consultant Nutrition Physicians
Apeksha Hospital, Maharagama

Dr. Anuruddha Padeniya, Chairman
Health and Nutrition Committee
President, Society for Health Research and Innovation

Ms. Ruchira Gunasekara,
Attorney-at-Law
President - OPA

Sujeewa Lal Dahanayake,
Attorney-at-Law,
General Secretary - OPA.

The Organisation of Professional Associations of Sri Lanka
275/75, Prof. Stanley Wijesundera Mawatha, Colombo 07,
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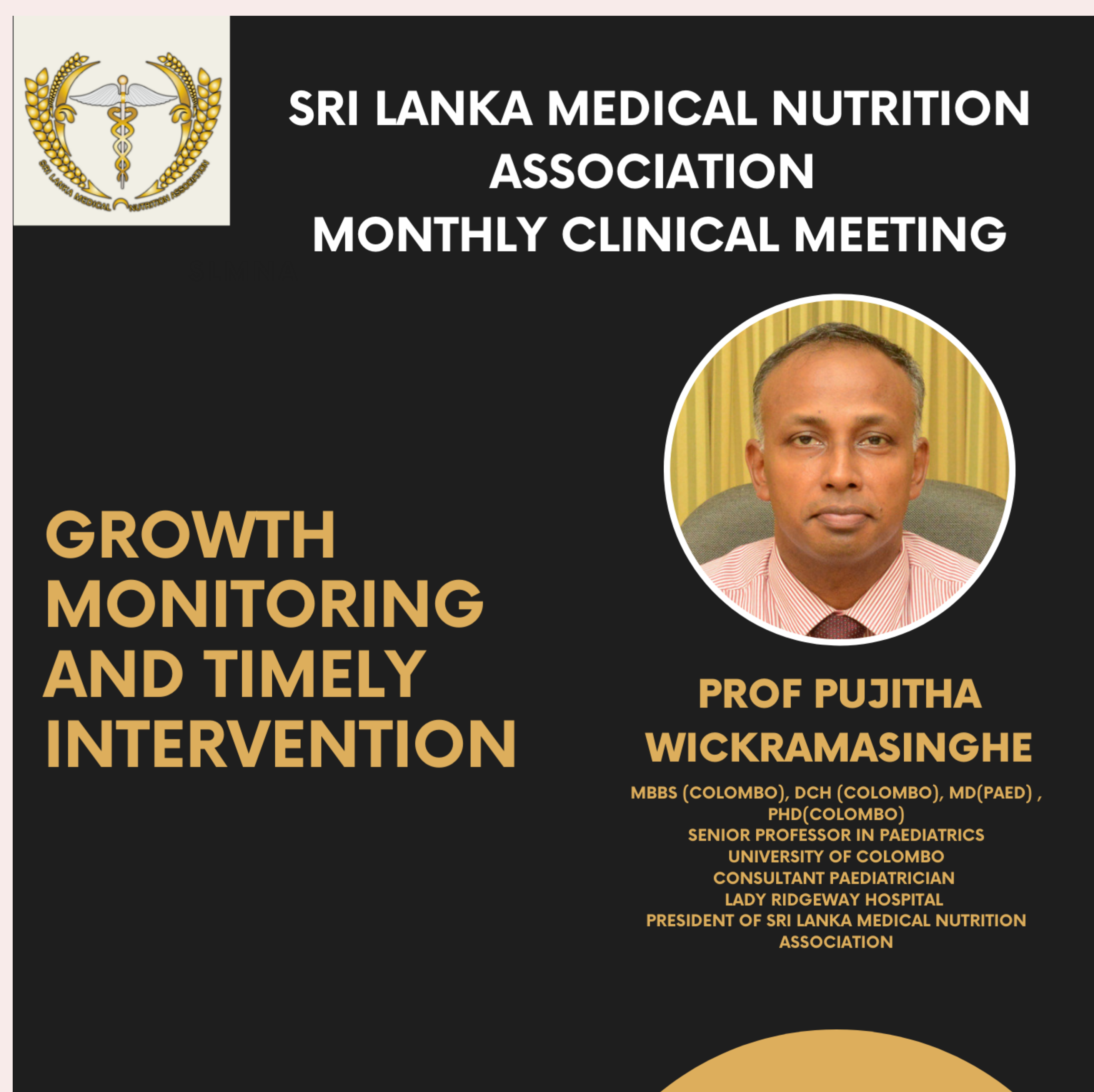
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Symposium on Malnutrition organized by the Health and Nutrition committee of Organization of Professional Associations of Sri Lanka was held on 10th of February 2023 as a joint project of SLMNA and SLCNP at OPA Auditorium.

Past events since last publication

SLMNA monthly clinical meetings

SLMNA monthly clinical meeting lecture by Prof. Pujitha Wickramasinghe on “Growth monitoring and timely intervention” was held on 28th February 2023 at LRH New Auditorium



Upcoming events

'Medicare National Health care Exhibition 2023'

'Asia Wellness Forum' together with 'Aitken Spence Conventions & Exhibitions' under the patronage of the 'Ministry of Health' has organized 'Medicare National Health Care Exhibition 2023' from 3rd to 5th of March 2023 at BMICH, Colombo. SLMNA will be allocated a stall in the Exhibition.

SLMNA monthly clinical meetings

Further details of SLMNA monthly clinical meeting for the month of March will be updated in our official website. Stay tuned.



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SLMNA

**Sri Lanka Medical Nutrition Association,
Email -slmna2015@gmail.com**