

Nutri-Bulletin

Nutrition Society of Sri Lanka



President's Message



It is with great pleasure that I welcome you to the first issue of the **NSSL Nutri-Bulletin – April 2026**, published in celebration of the forthcoming **National Nutrition Month, June 2026**.

This year's Nutrition Month theme, **"Rethink Snacks: Choose Healthy and Natural Snacks,"** highlights an important yet often overlooked aspect of our daily dietary practices. In the Sri Lankan context, where rapid urbanization, changing food environments, and busy lifestyles are increasingly shaping eating behaviours, snacking has become an integral part of the daily diet across all age groups. However, the quality and nutritional value of these snacks play a crucial role in determining overall health and long-term well-being.

Thoughtful and informed snacking can help bridge nutrient gaps, sustain energy levels, and support optimal growth, learning, and productivity. Conversely, frequent consumption of energy-dense, nutrient-poor processed snacks contributes significantly to the growing burden of non-communicable diseases in Sri Lanka, including obesity, diabetes, and cardiovascular diseases.

As nutrition professionals, researchers, and advocates, we carry a collective responsibility to guide communities toward healthier and more sustainable dietary choices. Promoting locally available, culturally appropriate, and nutrient-dense snack options; encouraging mindful eating behaviours; and strengthening nutrition education at community and school levels are essential strategies in improving the nutritional well-being of our population.

The NSSL Nutri-Bulletin serves as a valuable platform to share knowledge, research, creativity, and innovation in the fields of nutrition, dietetics, and public health. I am pleased to note the diverse contributions from our members, reflecting the richness, commitment, and multidisciplinary nature of the nutrition community in Sri Lanka.

I extend my sincere appreciation to all contributors and to the editorial team for their dedication and hard work in bringing this publication to fruition. I also warmly encourage all members to continue engaging actively, sharing ideas, and contributing towards strengthening nutrition science and practice in Sri Lanka.

Let us use this opportunity to inspire healthier lifestyles through simple yet impactful choices, starting with what we eat between meals.

Together, let us rethink snacks and promote healthy, natural, and locally available food choices for a healthier Sri Lanka.

Prof. Kumari M. Rathnayake
President
Nutrition Society of Sri Lanka

Editor's Message



As we stand on the threshold of the Sinhala and Tamil New Year in April, a season of renewal, family gatherings, and joyous feasting, I wish to share a few thoughts on a topic that lies at the very heart of our mission: **healthy snacking during the festive holidays.**

The Aluth Avuruddu bring with it an abundance of long-valued traditions: the richness of kiribath, the golden crunch of kavum and kokis, the spicy aroma of murukku and achcharu, and the sweet lure of pani walalu and dodol. These delicacies are more than food; they are threads that weave us together across communities. Yet, in our enthusiasm to celebrate, it is easy to slip into patterns of frequent, high-sugar, high-fat snacking that can quietly challenge the very health we hope to nurture in the New Year.

This April, let us gently guide our families and communities toward mindful enjoyment. Healthy snacking does not mean abandoning tradition; it means choosing balance and wisdom alongside flavour. A few practical suggestions we can champion together:

- **Fruit-forward celebrations:** Switch to seasonal mangoes, ripe bananas, wood apple, and king coconut water as the first “welcome” snacks.
- **Nutritious savouries:** Replace or alternate deep-fried items with roasted chickpeas (kadala), air-dried or oven-baked murukku-style snacks, and vegetable-based bites such as carrot and cucumber sticks with a light coconut sambol.
- **Portion and plate wisdom:** Encourage the “one-handful” rule for traditional sweets and pair every sweet treat with a fibre-rich or protein-rich partner (a slice of fresh pineapple, a small bowl of curd, or a handful of roasted peanuts).
- **Hydration first:** Keep chilled herbal infusions (cinnamon, ginger-lemon, or belimal or iramusus tea), quick juice fixes (such as lemon or lime juice) and king coconut water readily available instead of sweetened soft drinks.
- **Movement with merriment:** Think about light post-meal walks around the garden or traditional outdoor games, a beautiful way to balance the extra calories while strengthening family bonds.

As the premier professional body dedicated to nutrition in Sri Lanka, the Nutrition Society has a powerful voice at this festive moment. I invite each of you, whether through clinic, community programme, social media, or family gatherings, to share simple, culturally respectful messages that help people enjoy the New Year without compromising their health goals.

May this April bring you and your loved ones not only happiness and prosperity, but also the deep satisfaction that comes from nourishing both body and tradition.

Wishing you a joyful, healthy, and balanced Sinhala Tamil New Year!

Dr.Thushanthi Perera
Editor
Nutrition Society of Sri Lanka

CONTENTS

Past President's Feature Article - Healthy Snacking: Necessary Habit or Unnecessary Calories?	05
Prof. Ananda Chandrasekara	
The Orchestra Inside the Cell: The Curious Case of Musical Proteins	08
Mr. Gihan Wijelath	
Importance of Nuts and Seeds in Weight Management	10
Ms. Parami Weerasinghe	
Digital Health and Nutrition: The Rise of Mobile Health Apps	13
Ms. Mifra Sarap	
Unveiling the Power of Vitamin E: A Promising Ally in the Fight Against Non-Alcoholic Fatty Liver Disease (NAFLD)	16
Ms. Shiwanthi Dharmapala	
Swayanjatha: A Nutritious and Health-Promoting Traditional Sri Lankan Food Grain	19
Prof. WKSM Abeysekera, Dr. UMA Kumara, Ms. HHK Achala and Ms. JVKA Sajeewani	
Why Stress Makes Us Crave Comfort Food???	21
Ms. Nimashi A. Wijerathne	
The Role of Natural Antioxidants in Promoting Health and Extending Food Shelf Life	23
Ms. Jemika Ponnuthurai	
Small Millets Kali: A Simple Traditional Breakfast for Better Health	26
Dr. S. Sathish	
When "All You Can Eat" Becomes "More Than We Need": Rethinking Buffet Culture from Nutrition and Sustainability Perspectives	28
Mr. Y. Sasanka Dilshan de Silva	
Nature's Pharmacy: Can Papaya Leaf Extract Help Dengue Patients?	31
Ms. J.A.D.C.N. Jayanetti and Dr. E.J. Eugene	
Behaviour Activation Therapy (BAT) for Improving Diet Quality in the Field of Nutritional Psychology	34
Ms. Mathusha Sabhanayakam	
Strengthening Protein and Nutrition Security in Sri Lanka "Critical Role of Local Protein Sources in Improving Dietary Quality"	36
Ms. Kalaivizhi Varathanathan	
Can Nuts Help You Eat Less? Appetite regulating effects of nuts in overweight and obese adults Randomized controlled cross over acute feeding trial	39
Ms. S. T. Nimasha Rashini, Mrs. Dilki S. Perera and Prof. Kumari M. Rathnayake	
Guiding Schools Toward Healthier Food Environments Highlights from a School-Based Nutrition Intervention	41
Ms. Madusha Karunanayake, Ms. Shiromika Indramali, Dr. Thushanthi Perera, Prof. Janaki Mohotti, Dr. Uvasara Dissanayake, Prof.Thushara Kudagammana, Dr. Danny Hunter and Prof. Renuka Silva	

Past President's Feature Article

'Featured Article' is a recently introduced segment to the NSSL Newsletter - An invited entry by a selected, leading expert in the fraternity. This segment was introduced to the Newsletter with the intension of further strengthening the readership of the NSSL Newsletter plus encouraging the prospective authors.

Prof. Ananda Chandrasekara, Immediate Past President kindly accepted our invitation to do the Featured Article to the NSSL Nutribulletin Issue I. In-line with the 2026 National Nutrition Month's theme, he offered his expertise to enlighten us on "**Healthy Snacking: Necessary Habit or Unnecessary Calories?**".



Prof. Ananda Chandrasekara
Immediate Past President
The Nutrition Society of Sri Lanka

Prof. Ananda Chandrasekara is an academic and clinician specialising in clinical nutrition, health sciences, and translational health research, with a multidisciplinary background that integrates medical practice, nutrition science, and health professional education. He has served as Professor in Applied Nutrition at the Department of Nutrition and Dietetics, Wayamba University of Sri Lanka and held the position of Head of the Department of Nutrition and Dietetics from 2024 to 2025.

Prof. Ananda completed a PhD in Human Nutrition (Clinical Biochemistry) at the University of Sydney, where his doctoral research examined the long-term metabolic consequences of maternal undernutrition and subsequent nutritional rehabilitation. He holds an MSc in Food and Nutrition and a BSc (Honours) in Agriculture (Food and Nutrition) from the University of Peradeniya, Sri Lanka, as well as a Master of Teaching from the University of Melbourne, providing a strong academic foundation in both nutrition science and evidence-based pedagogy.

His research focuses on the intersections of clinical nutrition, metabolic health, and chronic disease prevention, with particular emphasis on the pathophysiology and nutritional modulation of insulin resistance, metabolic syndrome, obesity, and cardiometabolic risk. Further he has expanded research on diet-based interventions, functional foods, and population health approaches aimed at addressing the growing burden of non-communicable diseases.

In addition to academic roles, Prof. Ananda has served as President of the Nutrition Society of Sri Lanka from 2024 to January 2026 and currently serves as an active member and Immediate Past President of the Society. He is also a member of the Australian Institute of Medical and Clinical Scientists (Research). He is working towards translating nutrition and health science into practical and policy-relevant strategies that improve population health outcomes.



Healthy Snacking: Necessary Habit or Unnecessary Calories?

Snacking has become an increasingly common feature of modern dietary patterns, including in Sri Lanka. Supermarkets, workplace routines, and social norms particularly during meetings, conferences, and institutional gatherings often reinforce the idea that snacks are an essential part of daily eating. However, from a scientific and physiological perspective, an important question arises: “is snacking truly necessary for healthy individuals, or has it become a habitual practice contributing to excess calorie intake and poor dietary quality?”

For most healthy adults, there is no physiological requirement to consume food between meals. A balanced diet consisting of three main meals can adequately meet daily energy and nutrient needs. Current scientific evidence does not consistently show that routine snacking improves metabolic health, weight control, or nutrient adequacy in healthy individuals. On the contrary, frequent and unplanned snacking particularly on energy-dense, nutrient-poor foods can contribute to excess calorie intake and increase the risk of overweight and non-communicable diseases.

This issue is particularly relevant in the Sri Lankan context, where commonly consumed snack items include deep-fried and refined carbohydrate-rich foods such as patties, rolls, buns, and other bakery products. These foods are typically high in unhealthy fats, salt, and refined flour, and provide little nutritional benefit beyond energy. Regular consumption of such snacks, especially in social and institutional settings, contributes to what may be described as “passive overconsumption,” where individuals consume excess calories without a corresponding nutritional advantage.



Nevertheless, there are specific situations where snacking may be beneficial. Growing children and adolescents, for example, have higher nutrient requirements relative to body size and smaller gastric capacity. For them, one or two planned, nutritious snacks per day can help meet energy and micronutrient needs. Similarly, pregnant women particularly those experiencing nausea may benefit from small, frequent meals or snacks to maintain adequate intake. Older adults with reduced appetite or those at risk of malnutrition may also require snacks to support energy and protein intake. In addition, individuals with high physical activity levels, such as athletes or manual labourers, may use snacks strategically to maintain energy balance and support performance.

In the Sri Lankan setting, however, an important public health opportunity exists. National dietary surveys and observations consistently indicate that fruit and vegetable consumption is below recommended levels. In this context, snacking if practised can be repositioned as a nutritional opportunity rather than a caloric burden. For individuals who do not regularly consume adequate fruits and vegetables as part of their main meals, incorporating these foods as snacks can help improve overall diet quality.



Fresh fruits, sliced vegetables, boiled legumes, and minimally processed traditional foods can serve as practical and culturally appropriate alternatives to processed snack items. For example, seasonal fruits such as papaya, banana, guava, or pineapple, and simple vegetable-based preparations can provide essential vitamins, minerals, fibre, and bioactive compounds that are often lacking in the typical diet.

A particularly important area for change is the prevailing culture of serving energy-dense snacks during meetings, conferences, and institutional gatherings. While socially ingrained, this practice contributes significantly to unnecessary calorie intake, especially among individuals who attend multiple such events. There is a strong case for reconsidering and gradually abandoning this practice. Replacing these items with fresh fruits, cut fruit platters, or simple vegetable-based options would represent a meaningful and achievable step towards improving dietary habits at a population level.

Such changes would not only reduce the intake of unhealthy fats and refined carbohydrates but also promote a culture of healthier eating in professional and academic environments.

When snacks are consumed, they should be purposeful based on genuine hunger or specific nutritional needs rather than driven by habit or social expectation. Portion control is essential, and the emphasis should always be on nutrient-dense choices rather than calorie-dense convenience foods.

Public health messaging should therefore move away from encouraging routine snacking and instead promote balanced meals, mindful eating, and the strategic use of healthy snacks where appropriate. At the same time, institutional practices especially in meetings and conferences should evolve to reflect these principles. Replacing traditional energy-dense snacks with fruits and vegetables is a simple yet powerful step towards improving the nutritional health of the Sri Lankan population and reducing the burden of non-communicable diseases.

The Orchestra Inside the Cell: The Curious Case of Musical Proteins

At first glance, biology and music may appear to belong to entirely different worlds. One is the domain of molecules, cells, and biochemical reactions, while the other is the realm of melody, harmony, and artistic expression. However, within the microscopic landscape of the cell, scientists have discovered an unexpected intersection between these two fields. Some proteins are named after musical instruments, reminding us that biological systems, much like orchestras, rely on coordinated interactions among many players to produce a harmonious outcome.

Among the most intriguing examples are the proteins **Piccolo** and **Bassoon**. These large proteins reside in the presynaptic active zone of neurons, a specialized region where nerve cells release neurotransmitters to communicate with one another. Acting as molecular scaffolds, they help organize and stabilize the complex machinery responsible for synaptic transmission. However, their names evoke the sounds of an orchestra rather than the intricacies of neurobiology.



Mr. Gihan Wijelath
Department of Agricultural, Food and
Nutritional Science
University of Alberta
Edmonton, Canada

The origins of these musical names reflect both scientific creativity and metaphors. When researchers first characterized these proteins in the 1990s, they recognized that multiple molecules at the synapse must work together in precise coordination, much like the instruments in an orchestra. The name "Piccolo" was given to a massive protein; while the namesake instrument is the smallest in the orchestra, the protein is a giant, with its full-length form weighing approximately 500 kDa. The humour lies in this contrast: the piccolo is diminutive, yet its namesake protein is one of the largest scaffolds in the active zone. The protein "Bassoon," named after the deep-toned woodwind instrument, was discovered soon after. Weighing in at approximately 400 kDa, it functions alongside Piccolo, further reinforcing the musical theme.

Together, Piccolo and Bassoon contribute to the structural framework that ensures that neurotransmitter release occurs with remarkable precision. When an electrical signal reaches the end of a neuron, synaptic vesicles dock, fuse, and release their chemical cargo within milliseconds. Without the careful organization provided by these scaffold proteins, part of what scientists call the Cytomatrix at the Active Zone (CAZ), communication between neurons would be far less reliable. In this sense, they resemble the structural backbone of an orchestra, the stage and arrangement that allows musicians to perform in harmony.

The tradition of musical naming did not end there. Other researchers have continued this theme with proteins such as **Clarinet** and **Tuba**.

Although these proteins differ in function and biological context, their names reflect an appreciation for metaphor in scientific discovery. For instance, **Clarinet(CLA-1)** was identified in the model organism *Caenorhabditis elegans* as a functional analogue to vertebrate scaffolds, helping to organize synapses in simpler nervous systems.

Meanwhile, **Tuba (also known as DNMBP)** acts as a scaffold that links the cell's "shipping machinery" to its structural skeleton, regulating cellular signalling and the organization of the cytoskeleton. Each contributes to the intricate coordination of cellular processes, reinforcing the analogy between biological systems and musical ensembles.

Even beyond these examples, the naming of genes and proteins often reflects the creativity of scientists who discover them. Researchers sometimes choose names that capture a molecule's function, appearance, or simply a moment of humor during the discovery process. These names serve as memorable entry points for complex biological systems. They also remind us that science, while rigorous and analytical, is ultimately a human endeavour shaped by imagination and curiosity.

The metaphor of music offers a particularly fitting lens through which to view cellular biology. Inside every cell, thousands of proteins interact with remarkable precision. Enzymes catalyze chemical reactions, structural proteins maintain cellular architecture, and signalling molecules transmit information across molecular networks. Individually, each protein performs a specific task; collectively, they create a dynamic system capable of sustaining life. As in an orchestra, each musician contributes individually, but their coordinated actions transform these contributions into a coherent whole.

This perspective can also deepen our appreciation of the elegance of biological systems. Just as a symphony emerges from the interplay of instruments, cellular function arises from the interactions of countless molecular components. Modern biophysics even suggests that proteins "sing" in their own way, possessing low-frequency vibrations that allow them to change shape and function. Disruption in one part of the system, whether a malfunctioning protein or a genetic mutation, can disrupt the entire performance, much like a missing instrument in an orchestra.

Thus, musical proteins provide more than an amusing footnote in molecular biology. They offer a reminder that science often relies on metaphors to understand complex phenomena. The orchestra analogy helps us visualize how molecules collaborate, how structure supports function, and how coordination underlies life processes. Ultimately, the story of musical proteins reveals that the boundary between science and art is not as rigid as it might seem. Within the microscopic environment of the cell, proteins assemble, interact, and perform their roles with astonishing precision, creating a silent symphony that sustains the rhythms of life.



Our Problem!

මට වැඩ වැඩියි, වෙලාව නැහැ කරගන්න...
කාටද ඇහැකි ඔය විදිහට මැන කන්න...
අප පැරණියෝ ඕවා කෙරෙ නැහැ ඔන්න...
මේවා නොදැනුවත් කම බව දැනගන්න...

කාර්යබහුල බව ගැනමයි පවසන්නේ...
"මම මේ ඉන්නෙ අවුලක් නැහැ මට වෙන්නේ..."
කල් යනකොටයි ඔය හැමටම වැටහෙන්නේ
පෝෂණ අඩුව සැඟවීමයි පවතින්නේ

පාරේ නොටෙත් හැමතැන සැමවිටම ඇති
අනම්ම මුදලකට ගන්නට හැකිව ඇති
ස්ථුලභාවයට හෙමිහිට අත වනන සැටී
ක්ෂණිකව කාල ක්ෂණිකව කොයිබටද අපි?

අනතුර වෙන්න පළමුව පිලියම් කරමු
හිරෝහි පරපුරට අපි පදනම දමමු
හිසි පෝෂණය හට අවධානය පුදුම
එක්වී මන්දපෝෂණයෙන් අපි මිදෙමු...



Mr. Dinuka Bandara
Technical Advisor- Integrated Nutrition
World Vision Lanka



Importance of Nuts and Seeds in Weight Management



Weight management remains one of the most significant public health and clinical nutrition challenges worldwide. The increasing prevalence of overweight and obesity has led to a growing interest in sustainable, evidence-based dietary strategies that promote both weight loss and long-term metabolic health.

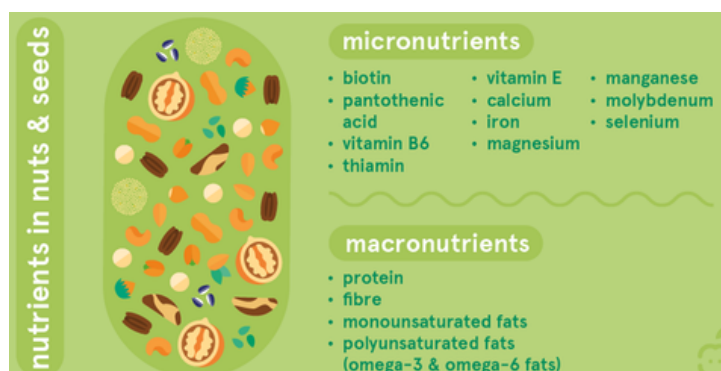
Among various functional food groups, nuts and seeds have gained considerable scientific attention due to their unique nutritional composition and their paradoxical association with weight control. Despite being energy-dense, habitual consumption of nuts and seeds is linked with lower body weight, improved satiety, and reduced risk of metabolic disorders (Mozaffarian et al., 2011).

Nutritional Composition of Nuts and Seeds

Nuts and seeds are nutrient-dense foods rich in essential macronutrients and micronutrients. They provide:

- Healthy fats (monounsaturated and polyunsaturated fatty acids)
- Plant-based protein
- Dietary fiber
- Vitamins (e.g., vitamin E, B vitamins)
- Minerals (e.g., magnesium, potassium, calcium)
- Bioactive compounds (polyphenols and phytosterols)

This complex nutrient profile contributes to their beneficial effects on metabolic health and weight regulation (Ros, 2010).



Ms. Parami Weerasinghe
Nutritionist
Heracle Care & Wellness
Lyceum Global Holdings

Energy Density vs. Weight Gain: The Paradox

Traditionally, high-energy foods have been associated with weight gain. However, multiple epidemiological and clinical studies have demonstrated that nut consumption does not promote weight gain and may even assist in weight control (Martínez-González and Bes-Rastrollo, 2011).

Several mechanisms explain this paradox:

- Incomplete energy absorption due to the physical structure of nuts
- Increased satiety reduces total caloric intake
- Higher thermogenic effect during digestion

Research suggests that up to 10–15% of the fat in nuts may not be absorbed, thereby lowering their effective caloric contribution (Baer et al., 2012).

Role in Appetite Control and Satiety

One of the most important mechanisms through which nuts and seeds aid weight management is appetite regulation. The combination of protein, fiber, and fat slows gastric emptying and prolongs digestion, resulting in a sustained feeling of fullness.

Protein stimulates satiety hormones such as peptide YY (PYY) and glucagon-like peptide-1 (GLP-1).

Fiber adds bulk to the diet and delays digestion.

Fats contribute to palatability and satiety through hormonal signaling.

Regular inclusion of nuts and seeds in meals or as snacks can reduce hunger and prevent overeating. For example, consuming a handful of almonds between meals has been shown to decrease subsequent calorie intake. Clinical trials have shown that consuming nuts as snacks leads to reduced hunger and lower energy intake in subsequent meals (Mattes and Dreher, 2010).

Impact on Metabolism and Fat Oxidation

Nuts and seeds contribute to improved metabolic efficiency. The unsaturated fats found in these foods enhance fat oxidation and may help reduce the accumulation of body fat, particularly visceral fat.

Monounsaturated fats (MUFA), found in almonds and peanuts, improve insulin sensitivity.

Polyunsaturated fats (PUFA), especially omega-3 fatty acids in flaxseeds and walnuts, promote lipid metabolism and reduce inflammation.

Improved metabolic flexibility allows the body to use fat more effectively as an energy source, which is crucial for weight management.

The high content of unsaturated fatty acids in nuts improves lipid metabolism and promotes fat oxidation. Monounsaturated fats (MUFA) improve insulin sensitivity, while polyunsaturated fats (PUFA), particularly omega-3 fatty acids, enhance metabolic flexibility and reduce adiposity (Ros, 2010).

Regular nut consumption has also been associated with reduced abdominal fat accumulation, which is a key risk factor for metabolic syndrome (Bes-Rastrollo et al., 2007).

Glycemic Control and Insulin Regulation

Nuts and seeds have a low glycemic index and play a critical role in blood glucose regulation. When included in meals, they help:

- Slow carbohydrate digestion
- Reduce postprandial glucose spikes
- Improve insulin sensitivity

These effects are particularly beneficial for individuals with insulin resistance or diabetes, as stable blood glucose levels help regulate appetite and reduce fat storage (Jenkins et al., 2011).



Preservation of Lean Body Mass

During weight loss, maintaining lean muscle mass is essential to sustain metabolic rate. Nuts and seeds provide plant-based protein that contributes to muscle preservation. Although they are not complete protein sources, their inclusion in a balanced diet supports nitrogen balance and helps prevent muscle loss, thereby maintaining basal metabolic rate (BMR) (Freeman et al., 2001).

Anti-inflammatory and Antioxidant Properties

Chronic inflammation is closely linked to obesity and metabolic diseases. Nuts and seeds contain several anti-inflammatory compounds, including: Omega-3 fatty acids, Polyphenols and Vitamin E

These compounds reduce oxidative stress and inflammation, thereby improving metabolic outcomes and supporting weight management (Ros, 2010).

Gut Health and Microbiota

Recent research highlights the importance of gut microbiota in regulating body weight. Nuts and seeds act as prebiotics due to their fiber content, promoting the growth of beneficial gut bacteria.

- Improved gut health contributes to:
- Better digestion
- Regulation of appetite hormones
- Reduced inflammation

This emerging evidence suggests that nuts and seeds indirectly support weight management through modulation of the gut microbiome (Ukhanova et al., 2014).



Practical Applications in Diet

Incorporating nuts and seeds into daily meals is simple and versatile. However, portion control is essential due to their calorie density.

Recommended intake:

Nuts: 20–30 grams per day (approximately a handful)

Seeds: 1–2 tablespoons per day

Ways to include in the diet:

- Add almonds or peanuts to breakfast meals such as oats or yogurt
- Sprinkle sesame or sunflower seeds on salads and vegetable dishes
- Use flaxseeds or chia seeds in smoothies
- Include nuts in traditional dishes like rice, curries, or mullum

In a Sri Lankan context, locally available options such as peanuts, sesame seeds (thala), and cashews can be easily integrated into everyday meals.

Considerations and Limitations

While nuts and seeds offer numerous benefits, certain considerations must be kept in mind:

Portion control: Overconsumption can lead to excess calorie intake.

Salted varieties: High sodium content may contribute to hypertension.

Allergies: Some individuals may have nut allergies.

Cost and accessibility: Certain nuts may be expensive or less accessible in some regions.

Choosing unsalted, minimally processed options is recommended for maximum health benefits.



Evidence from Research

Large-scale studies provide strong evidence supporting the role of nuts in weight management:

The **PREDIMED** study demonstrated that a Mediterranean diet supplemented with nuts did not lead to weight gain (Estruch et al., 2013).

Cohort studies show inverse associations between nut intake and long-term weight gain (Mozaffarian et al., 2011).

Randomized trials confirm improved lipid profiles and no increase in body weight (Sabate, 2003).

Conclusion

Nuts and seeds are highly nutritious foods that play a multifaceted role in weight management. Despite their high energy density, they support weight control through mechanisms such as increased satiety, improved metabolism, reduced energy absorption, and better glycemic control. Their rich content of healthy fats, protein, fiber, and bioactive compounds makes them an essential addition to a balanced diet.

For sustainable weight management, the focus should not be on eliminating calorie-dense foods but on incorporating nutrient-dense options in appropriate portions. Nuts and seeds exemplify this principle by providing both health benefits and dietary satisfaction. Incorporating these foods into daily meals, especially within culturally relevant dietary patterns can significantly enhance both nutritional quality and long-term weight management outcomes.

References:

- Baer, D.J., Gebauer, S.K. and Novotny, J.A., 2012. Walnuts consumed by healthy adults provide less available energy than predicted by the Atwater factors. *The Journal of Nutrition*, 142(11), pp.2061–2067.
- Bes-Rastrollo, M., Sabaté, J., Gómez-Gracia, E., Alonso, A. and Martínez-González, M.A., 2007. Nut consumption and weight gain in a Mediterranean cohort. *Obesity*, 15(1), pp.107–116.
- Estruch, R., Ros, E., Salas-Salvadó, J., Covas, M.I., Corella, D., Arós, F., Gómez-Gracia, E., Ruiz-Gutiérrez, V., Fiol, M. and Lapetra, J., 2013. Primary prevention of cardiovascular disease with a Mediterranean diet. *New England Journal of Medicine*, 368(14), pp.1279–1290.
- Freeman, M.P., Hibbeln, J.R., Wisner, K.L., Davis, J.M., Mischoulon, D., Peet, M., Keck, P.E., Marangell, L.B., Richardson, A.J. and Lake, J., 2001. Omega-3 fatty acids: evidence basis for treatment and future research. *The Journal of Clinical Psychiatry*, 62(12), pp.1013–1020.
- Jenkins, D.J.A., Kendall, C.W.C., Banach, M.S., Srichaikul, K., Vidgen, E., Mitchell, S., Parker, T., Nishi, S., Bashyam, B. and de Souza, R., 2011. Nuts as a replacement for carbohydrates in the diabetic diet. *Diabetes Care*, 34(8), pp.1706–1711.
- Martínez-González, M.A. and Bes-Rastrollo, M., 2011. Nut consumption, weight gain and obesity: epidemiological evidence. *Nutrition, Metabolism and Cardiovascular Diseases*, 21, pp.S40–S45.
- Mattes, R.D. and Dreher, M., 2010. Nuts and healthy body weight maintenance mechanisms. *Asia Pacific Journal of Clinical Nutrition*, 19(1), pp.137–141.
- Mozaffarian, D., Hao, T., Rimm, E.B., Willett, W.C. and Hu, F.B., 2011. Changes in diet and lifestyle and long-term weight gain in women and men. *New England Journal of Medicine*, 364(25), pp.2392–2404.
- Sabaté, J., 2003. Nut consumption and body weight. *The American Journal of Clinical Nutrition*, 78(3), pp.647S–650S.





Digital Health and Nutrition: The Rise of Mobile Health Apps



Ms. Mifra Sarap
Master of Global Public Health Candidate
Griffith University
Australia

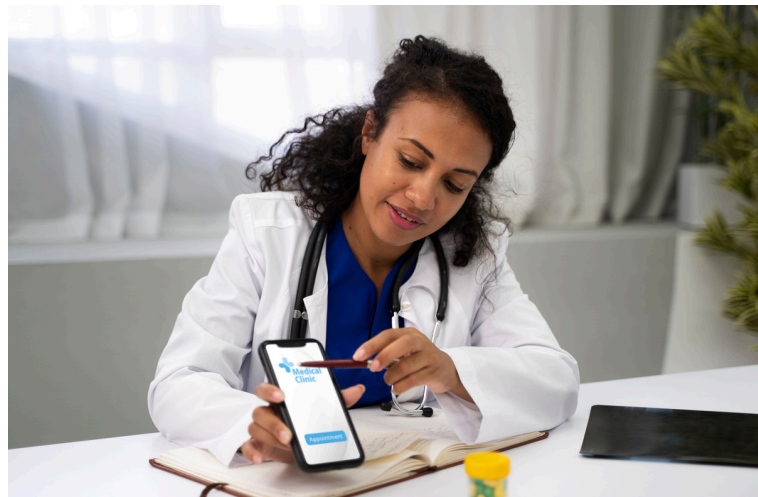
The Digital Health Revolution

Digital health broadly refers to the use of information and communication technologies to improve health outcomes, healthcare delivery, and overall well-being. This includes electronic health records, telehealth consultations, wearable devices, and mobile applications. Among these, mHealth, the use of mobile devices for health services and information, has emerged as a powerful bridge between individuals and health systems.

Nutrition is one of the most active areas of mHealth adoption. Global estimates suggest there were more than 325,000 health, fitness, and medical apps across major app stores as early as 2017, many focused on diet, fitness, and weight management. By 2022, over 52,000 healthcare and medical apps were available on Google Play, with more than 51,000 on the Apple App Store, indicating rapid expansion in digital health. This surge reflects growing consumer demand for autonomy, convenience, and personalization in managing diet and lifestyle.

From Food Diaries to Digital Ecosystems

Historically, tracking food relied on paper diaries and memory, processes that were time-consuming and prone to error. Mobile apps have transformed this by allowing instant food logging, barcode scanning, and automatic nutrient estimation through large databases. Popular apps like MyFitnessPal and Yazio have become widely used globally.



In just over a decade, smartphones have transformed from simple communication tools into pocket-sized health assistants, reshaping how people track food, exercise, and health risks. From step counters and calorie trackers to disease-specific diet tools, mobile health (mHealth) applications are redefining everyday nutrition and wellness. As digital technology becomes increasingly embedded in daily life, the rise of mobile health apps represents both a major public health opportunity and a new set of challenges.

Today's apps go far beyond simple calorie counting. Many now synchronize with wearable devices that track physical activity, sleep patterns, and heart rate, creating a multi-dimensional view of an individual's lifestyle. Cloud-based algorithms benchmark daily intake against established dietary guidelines and offer tailored suggestions, such as increasing fiber or reducing saturated fats.

For clinicians, these tools are proving invaluable. Dietitians can monitor clients remotely, review logged food records, and adjust meal plans in real time, rather than relying solely on periodic consultations and self-reporting. In community and public health settings, app-based programs and web platforms are increasingly used to expand nutrition education, particularly for weight management and chronic disease prevention.



Personalized Nutrition and the Data Revolution

A key attraction of mobile nutrition apps is personalization. By collecting information on age, sex, body size, goals, and health status, apps can generate individualized calorie targets, macronutrient distributions, and behavioral prompts. Some systems go further by integrating biometric data, such as blood glucose readings from continuous glucose monitors (CGMs), offering dynamic feedback for people with or at risk of diabetes.

Artificial intelligence (AI) and machine learning now allow apps to detect patterns in diet, activity, and weight over time, predicting adherence and flagging high-risk behaviors, like evening overeating or frequent consumption of ultra-processed foods. Image recognition, which lets users photograph meals instead of entering items manually, is being tested to reduce logging effort and improve accuracy. Yet, limitations remain. Much of the data depends on user self-report, which is vulnerable to underreporting and inaccurate portion estimation. Independent evaluations have found that consumer apps often underreport nutrients like saturated fat and cholesterol, though energy (calorie) reporting is generally more accurate. These findings highlight the need for validation and clear communication of app limitations to users who rely on them for health decisions, especially for cardiovascular disease prevention.

Behavior Change and Engagement Psychology

Nutrition is fundamentally behavioral, influenced by habits, motivation, social context, and food environments. The most effective apps incorporate evidence-based behavior change strategies, such as self-monitoring, goal setting, tailored feedback, and social support. Push notifications serve as cues reminding users to log meals, drink water, or meet step targets while gamification features like badges and streaks encourage consistent engagement.

Research suggests that mHealth apps can facilitate meaningful improvements in diet and weight when they integrate behavioral science principles and, in some cases, human coaching. A 2023 review of nutrition apps for people with chronic disease found that app-based interventions often improved dietary behaviors and health outcomes, although results varied depending on app design and the condition being managed. Similarly, a 2025 meta-analysis on mobile apps for obesity management concluded that these tools can produce modest but clinically meaningful weight loss and body composition improvements, especially when paired with professional guidance.

Maintaining engagement over time remains a challenge. Many users experience "digital fatigue," with app usage declining after the initial weeks. Hybrid models, where individuals log data digitally but also receive periodic feedback from a dietitian or coach via messaging or telehealth, appear more successful in sustaining adherence. Even minor increases in app usage, such as one additional day of logging per week, have been associated with improvements in markers like glycated hemoglobin for individuals with diabetes.

Public Health Potential: Equity and Accessibility

At the population level, mobile nutrition apps and SMS-based programs present opportunities to extend health promotion beyond clinics, particularly in low- and middle-income countries (LMICs). Evidence from diverse regions indicates that mobile-based interventions can improve dietary behaviors and physical activity in populations at high risk of type 2 diabetes and cardiovascular disease.

In countries like Sri Lanka, where smartphone penetration is increasing, digital platforms are being explored for maternal and child nutrition messaging. These platforms can provide nutrition education, monitor food intake, and deliver reminders in culturally appropriate formats. Mobile apps and web-based tools that combine food tracking, education, community support, and coach feedback have demonstrated success in reducing energy and fat intake while increasing moderate-intensity physical activity among high-risk populations.

Adapting these interventions for local cultural contexts, languages, and literacy levels is critical to their effectiveness. Mobile health solutions must account for diverse dietary practices, socioeconomic factors, and user preferences to maximize public health impact.

Opportunities and Challenges in Sri Lanka

Sri Lanka faces a rising prevalence of non-communicable diseases alongside ongoing challenges of malnutrition and micronutrient deficiencies. Mobile health applications offer a promising avenue to support dietary awareness, chronic disease prevention, and individualized care.

However, several challenges must be addressed:

1. **Accuracy and Reliability** – Not all apps are scientifically validated, which can mislead users. Collaboration with dietitians and nutrition experts is essential.
2. **Data Privacy** – Personal health information is sensitive, and secure handling is critical.
3. **Digital Divide** – Access to smartphones and reliable internet is not universal, especially in rural areas.
4. **Sustained Engagement** – Users often discontinue apps after initial enthusiasm; hybrid models with professional support show higher success.

By tackling these challenges, Sri Lanka can leverage digital health to improve population nutrition and empower individuals to make healthier choices.

The Role of Nutrition Professionals

Mobile health apps should complement, not replace, dietitians and nutritionists. Professionals are vital for ensuring evidence-based content, tailoring recommendations, monitoring progress, and providing expert guidance. By collaborating with app developers, dietitians can help create tools that are accurate, effective, and user-friendly.

These professionals also play a key role in integrating mHealth interventions into broader public health strategies, from school-based nutrition programs to community-level chronic disease prevention initiatives.

Looking Ahead: The Future of Digital Nutrition

The future of nutrition is increasingly digital. Artificial intelligence, wearable devices, and tele-nutrition services promise even more personalized, data-driven interventions. Imagine an app that not only tracks food but also predicts health risks, suggests alternative meals, and integrates seamlessly with wearable sensors to optimize lifestyle choices.

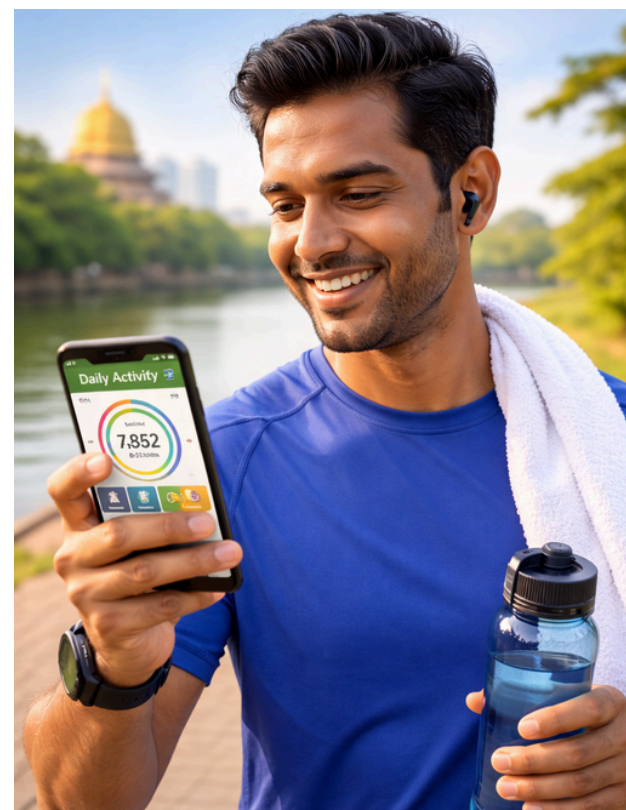
Big data collected from these platforms can inform public health policy, identify population-level trends, and enable targeted interventions for at-risk groups. As technology advances, mobile health applications could become essential tools in both individual and population health management. Mobile health applications are reshaping the way people think about food, health, and wellness. They provide convenient, personalized, and scalable solutions for diet tracking, chronic disease management, and behavior change.

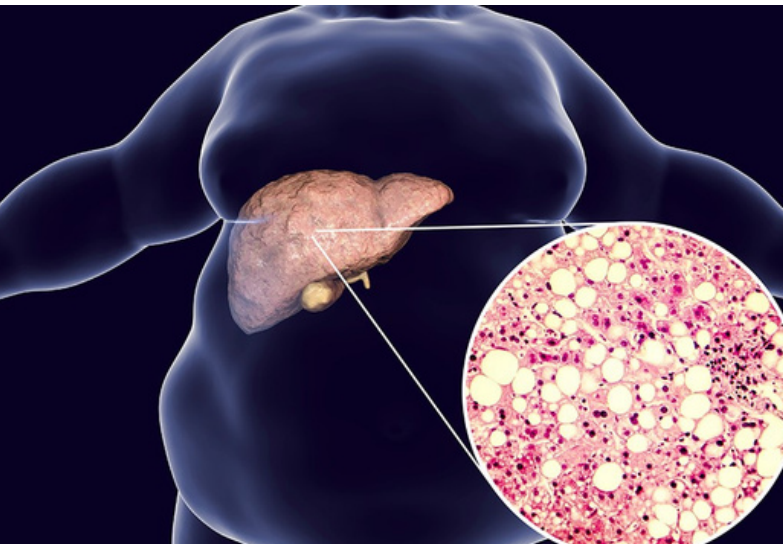
While challenges remain, including accuracy, privacy, accessibility, and long-term engagement, these digital tools hold enormous potential. For countries like Sri Lanka, where smartphone adoption is growing, mobile health apps offer a practical means to extend nutrition education, support healthier lifestyles, and reduce the burden of chronic diseases.

Ultimately, the rise of mobile health apps demonstrates that the future of nutrition is not only in the kitchen or clinic, but it is also in the palm of our hands.

References:

- Barnett, A., Hickman, I. J., Campbell, K. L., & Kelly, J. T. (2025). Translating digital health services for nutrition care management of chronic conditions in outpatient settings: A multi-stakeholder e-Delphi study. *Nutrition & Dietetics*, 82(2), 231–243. <https://doi.org/10.1111/1747-0080.12927>
- Barnett, A., Kelly, J. T., Wright, C., & Campbell, K. L. (2022). Technology-supported models of nutrition care: Perspectives of health service providers. *DIGITAL HEALTH*, 8(6), 205520762211046. <https://doi.org/10.1177/20552076221104670>
- Barnett, A., Wright, C., Stone, C., Ho, N. Y., Adhyaru, P., Kostjasyn, S., Hickman, I. J., Campbell, K. L., Mayr, H. L., & Kelly, J. T. (2023). Effectiveness of dietary interventions delivered by digital health to adults with chronic conditions: Systematic review and meta-analysis. *Journal of Human Nutrition and Dietetics*, 36(3), 632–656. <https://doi.org/10.1111/jhn.13125>
- Kelly, J. T., Collins, P. F., McCamley, J., Ball, L., Roberts, S., & Campbell, K. L. (2020). Digital disruption of dietetics: are we ready? *Journal of Human Nutrition and Dietetics*, 34(1). <https://doi.org/10.1111/jhn.12827>
- Macmillan Uribe, A., Duffy, E., Mcguirt, J., & Tripicchio, G. (2023). Digital Technology in Nutrition Education and Behavior Change: Opportunities and Challenges HHS Public Access. *J Nutr Educ Behav*, 55(6), 391–392. <https://doi.org/10.1016/j.jneb.2023.04.006>





Unveiling the Power of Vitamin E: A Promising Ally in the Fight Against Non-Alcoholic Fatty Liver Disease (NAFLD)

“Liver disorders contribute to significant disease burden worldwide. Among them Non-Alcoholic Fatty Liver Disease (NAFLD) emerged as the most prevalent liver disorder affecting 20-30% of the general population globally.”

NAFLD is characterized by the accumulation of fat in the liver of individuals who do not consume alcohol. NAFLD can advance to more serious liver disorders, including non-alcoholic steatohepatitis (NASH), cirrhosis, and potentially liver cancer. According to new research Vitamin E shows potential benefits as a therapeutic option for NAFLD.

What is NAFLD?

Nonalcoholic fatty liver disease is the process of lipid deposition within hepatocytes in the complete absence of excessive alcohol consumption or any other known cause of hepatic steatosis. This condition can start as simple fat buildup (steatosis) but may progress to a more severe state called steatohepatitis. Steatohepatitis involves liver inflammation. In up to 15% of patients, this can further lead to the development of end-stage liver disease with fibrosis known as cirrhosis. Finally, this can even cause hepatocellular carcinoma.

According to recent studies NAFLD is not just a result of insulin resistance and metabolic syndrome. Instead, it is a multifactorial disease. According to the multiple parallel hit hypothesis, NAFLD is influenced by a combination of genetic and epigenetic variations, along with environmental factors. Thus, combination of diverse factors such as insulin resistance, adipokine secretion, oxidative stress, lipid peroxidation, mitochondrial damage, gut microbiota, innate immunity, genetics, and epigenetic mechanisms ultimately cause liver injury leading to the progression of NAFLD.



Ms. Shiwanthi Dharmapala
Graduate Teaching Assistant
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka

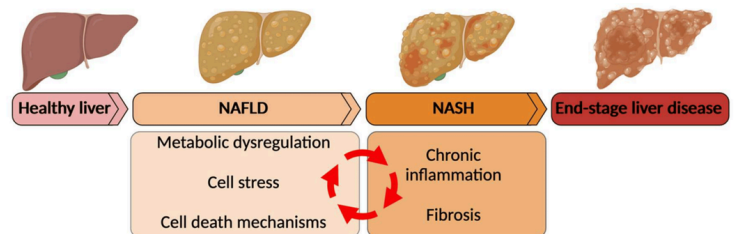


Figure 1. The spectrum of nonalcoholic fatty liver disease (NAFLD)

Source: Puengel T, Liu H et.al (2022)

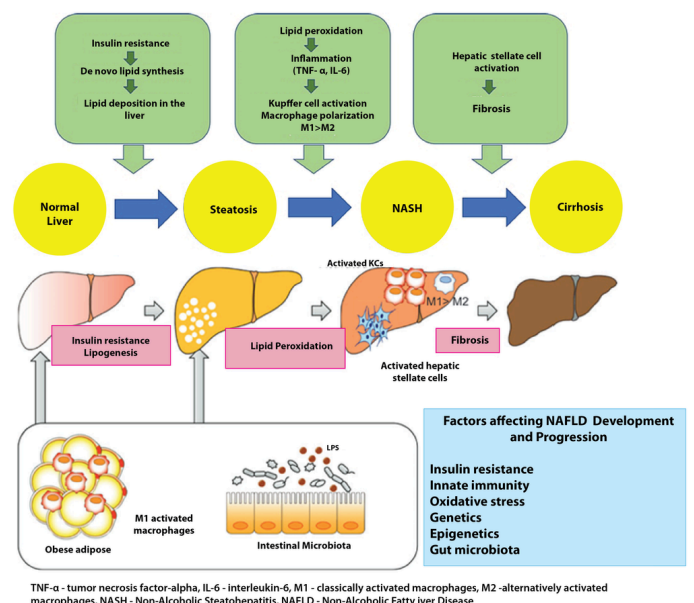


Figure 2. Progression of Non-Alcoholic Fatty Liver Disease (NAFLD)

Source: Nagashimada M, Ota T. (2019)

How NAFLD and NASH Occurs?

Obesity, along with unhealthy eating habits and environmental factors, can raise levels of free fatty acids (FFAs) and cholesterol in the blood. This can lead to insulin resistance, fat cell growth, and changes in the gut microbiome. Insulin resistance further aggravates fat cell dysfunction and increases fat production in the liver. This happens through the hepatic de novo lipogenesis pathway. This triggers the release of proinflammatory substances like interleukin (IL)-6, IL-1, and tumor necrosis factor (TNF)-α. These inflammatory signals further aggravate insulin resistance.

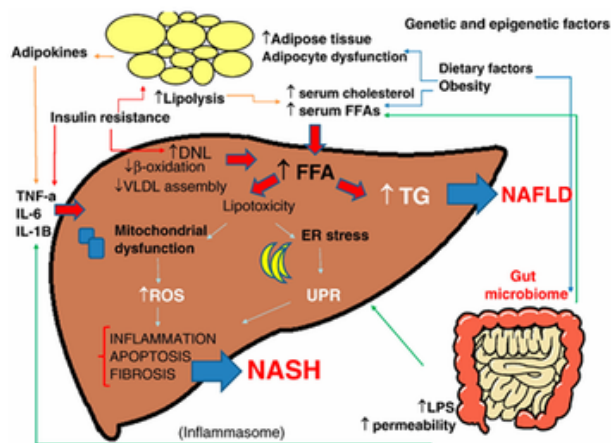


Figure 3. Pathogenesis of NAFLD/NASH

Source: El Hadi H, Vettor R, Rossato M. Vitamin E as a Treatment for Nonalcoholic Fatty Liver Disease

Altered gut microbiome leads to the buildup of triglycerides (TGs) and harmful levels of FFAs, free cholesterol, and other lipid byproducts. This accumulation causes mitochondrial dysfunction and oxidative stress. As a result, reactive oxygen species (ROS) are produced. This can create stress in the endoplasmic reticulum (ER), activating the unfolded protein response (UPR). All these events work together to cause liver inflammation and the development of fibrosis, which is referred to as nonalcoholic steatohepatitis (NASH).

Additionally, increased gut permeability allows microbial products like lipopolysaccharides (LPS) to enter the bloodstream. This further activates inflammatory pathways and contribute to ER stress causing inflammation.

Genetic and epigenetic factors also influence whether NAFLD progresses to NASH or stays stable. Patatin-like phospholipase domain-containing 3 (PNPLA3) is a gene that encodes for triacylglycerol lipase. This gene is involved in lipid breakdown and helps maintain balance between energy use and storage in fat tissue. A single nucleotide polymorphism (SNP) in this gene can lead to liver fat accumulation, inflammation, fibrosis, and even hepatocellular carcinoma (HCC).

Role of Vitamin E in NAFLD

Vitamin E is a fat-soluble antioxidant synthesized by plants. It exists naturally as tocopherol (alpha, beta, gamma, delta) and tocotrienol (alpha, beta, gamma, delta). Alpha-tocopherol is the most prevalent and powerful antioxidant among them, functioning as a scavenger of free radicals. Alpha Tocopherol is found in corn, peanut, and soybean oil, and tocotrienols in rice bran and palm oil.



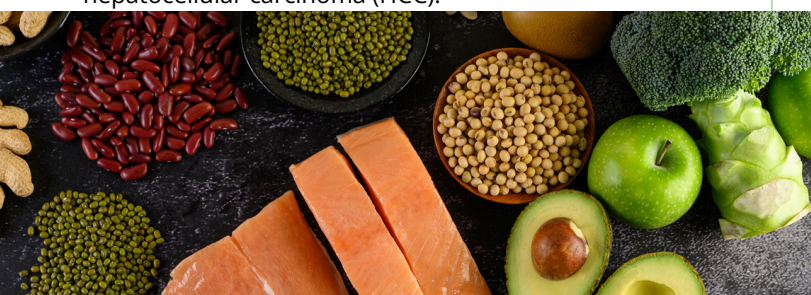
Figure 4. Food sources of vitamin E

Source: <https://r.search.yahoo.com>

Vitamin E as a Potent Antioxidant

Vitamin E plays a crucial role in protecting cells from oxidative damage by preventing the propagation of free radicals. Oxidative damage occurs when there's an imbalance between the production of reactive species and the body's antioxidant defenses, leading to DNA and tissue damage. The antioxidant power of vitamin E comes from the hydroxyl group in its aromatic ring, which donates hydrogen to neutralize free radicals or reactive oxygen species (ROS).

Tocopherols reduce lipid hydroperoxyl radicals and also inactivate singlet oxygen. α-tocopherol is the most effective form in humans and the major form of vitamin E in the diet. It consists of a chromanol ring structure with a polyisoprenoid side chain; the isoprene units are unsaturated in the tocotrienols. α, β, γ, and δ differ in the pattern of methyl groups at R1, R2 and R3. The major commercial form of vitamin E is α-tocopherol acetate, which is more stable than free tocopherol during storage. The tocopheryl radical, the major product formed during antioxidant action of vitamin E, is recycled by ascorbate. Tocopheryl quinone is also formed in small quantities.



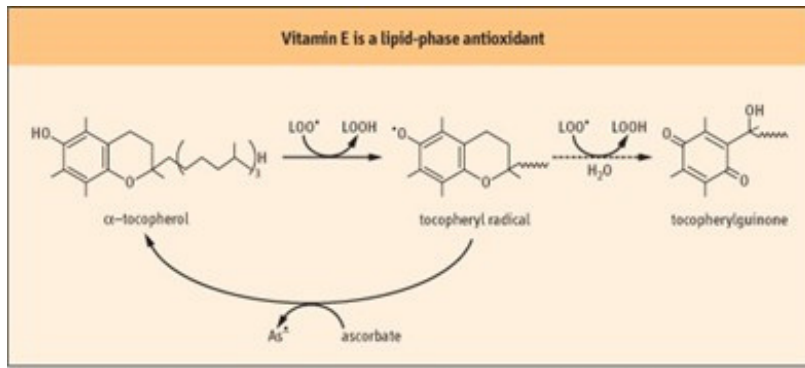


Figure 5. Antioxidant activity of vitamin E

Vitamin E in NAFLD Prevention and Therapy

In combating Non-Alcoholic Fatty Liver Disease (NAFLD) vitamin E plays an important role. As a strong antioxidant, it protects liver cells from oxidative stress. This is a key factor in NAFLD progressing to more severe forms like non-alcoholic steatohepatitis (NASH). Clinical trials have shown that Vitamin E is effective in treating NAFLD. Its antioxidant properties help reduce liver inflammation, improve insulin sensitivity, decrease lipid accumulation and peroxidation, and lower liver enzymes that signal liver damage.

Vitamin E neutralizes reactive oxygen species (ROS), which reduces liver inflammation and cell damage. This helps to prevent fibrosis and other complications. Additionally, vitamin E may decrease inflammation and insulin resistance by blocking the activation of M1-like macrophages/Kupffer cells and promoting the polarization of M2-like macrophages/Kupffer cells. M1 macrophages, are associated with inflammation and tissue damage. On the other hand, M2 macrophages help to reduce inflammation and support liver regeneration and fibrosis resolution

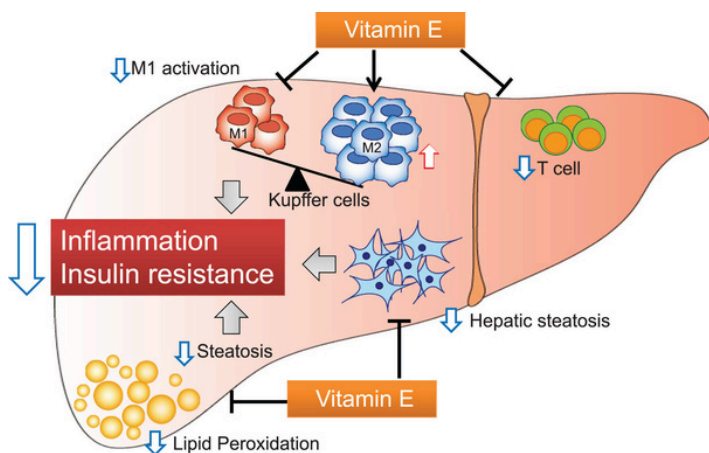


Figure 6. Vitamin E in NAFLD/NASH prevention and therapy
Source: Nagashimada M, Ota T. (2019)

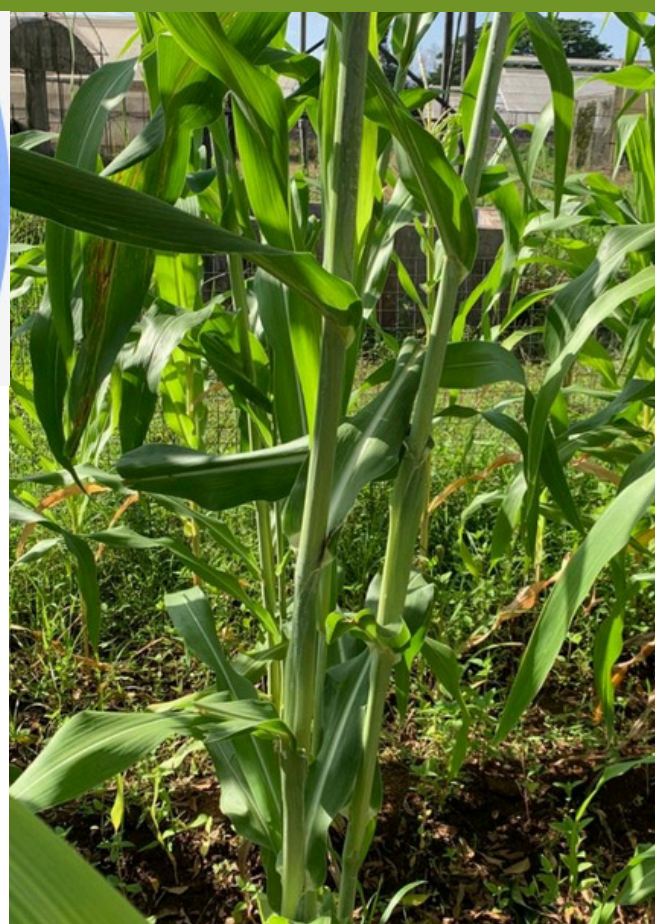
As more people are diagnosed with NAFLD, Vitamin E might become a hopeful treatment option for many patients. Its ability to reduce oxidative stress and inflammation makes it a valuable tool in the management of NAFLD. The recommended dosage of Vitamin E for NAFLD varies, with using doses of 800 IU per day. However, high doses of Vitamin E over long periods can have potential side effects. It is essential for patients to consult healthcare professionals before starting any supplementation. Thus, a better understanding of the pathophysiology of NAFLD and more research is needed to seek novel biological activities of vitamin E metabolites in the liver of NAFLD patients.



References:

- Nagashimada, M. and Ota, T. (2019), Role of vitamin E in nonalcoholic fatty liver disease. IUBMB Life, 71: 516-522. [https://doi.org/10.1002/iub.199113;184\(10\):2537-2564](https://doi.org/10.1002/iub.199113;184(10):2537-2564). doi: 10.1016/j.cell.2021.04.015. PMID: 33989548.
- Puengel T, Liu H, Guillot A, Heymann F, Tacke F, Peiseler M. Nuclear Receptors Linking Metabolism, Inflammation, and Fibrosis in Nonalcoholic Fatty Liver Disease. Int J Mol Sci. 2022 Feb 28;23(5):2668. doi: 10.3390/ijms23052668. PMID: 35269812; PMCID: PMC8910763.
- Perumpail, B. J., Li, A. A., John, N., Sallam, S., Shah, N. D., Kwong, W., Cholankeril, G., Kim, D., & Ahmed, A. (2018). The Role of Vitamin E in the Treatment of NAFLD. Diseases, 6(4), 86. <https://doi.org/10.3390/diseases6040086>

Swayanjatha: A Nutritious and Health-Promoting Traditional Sri Lankan Food Grain



Prof. WKSM Abeyssekera
Head, Department of Agricultural Technology
Faculty of Technology
University of Colombo



Dr. UMA Kumara
Senior Lecturer
Department of Agricultural Technology
Faculty of Technology
University of Colombo



Ms. HHK Achala
Research Scientist
Bio Technology Section
Industrial Technology Institute, Sri Lanka



Ms. JVKA Sajeewani
Temporary Instructor
Department of Agricultural Technology
Faculty of Technology
University of Colombo

Cereal grains have long served as the foundation of human diets worldwide, providing a major source of energy and essential nutrients. In recent years, there has been increasing interest in rediscovering traditional and underutilized grains due to their potential nutritional and functional benefits. These grains are increasingly recognized not only for their contribution to food security but also for their role in promoting health and well-being, particularly in the context of rising non-communicable diseases.

Sri Lanka possesses a rich diversity of traditional food crops, many of which remain scientifically under-explored. Swayanjatha is one such indigenous grain that has been traditionally utilized but lacks comprehensive scientific validation. According to traditional knowledge and farmer perceptions, Swayanjatha is believed to be an indigenous red rice variety adapted to dry zone conditions, particularly in areas such as Sooriyawewa, Sevanagala, and Thanamalwila in Sri Lanka

The crop is characterized by a tall growth habit and is typically cultivated under dry land (chena) farming systems. It is reported to have a relatively longer maturation period (six months), and the grains are described as small, round, and distinct in shape. Additionally, it is perceived to exhibit a certain level of tolerance to common field stresses, contributing to its persistence in marginal environments.

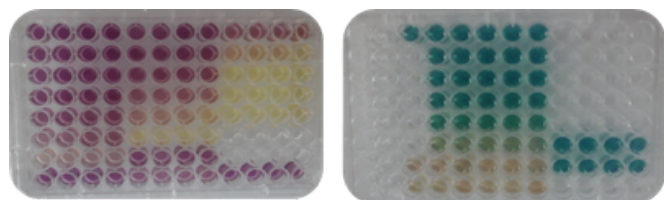
Despite traditional knowledge and farmer perceptions, Swayanjatha lacks scientific validation at the molecular level, and its precise taxonomic status remains unresolved due to insufficient genetic characterization. Furthermore, the existing literature lacks studies on its nutritional composition and bioactive properties. To address this gap, the Department of Agricultural Technology, Faculty of Technology, University of Colombo, has initiated research to determine its molecular identity, along with selected nutritional and bioactive properties of Swayanjatha, thereby establishing a scientific foundation on the indigenous food grain in Sri Lanka for future studies and potential applications. Molecular analysis was conducted using Polymerase Chain Reaction (PCR) targeting rice endosperm-specific prolamin gene. The findings revealed the absence of amplification of the rice endosperm-specific prolamin gene, suggesting that Swayanjatha does not exhibit typical molecular characteristics associated with conventional rice varieties

However, this observation alone is not sufficient to draw a definitive conclusion regarding its taxonomic classification. Therefore, further molecular investigations employing additional genetic markers are currently in progress to accurately determine the phylogenetic position and confirm the taxonomy of Swayanjatha.

Cereal grains are staple foods in human diets worldwide, providing a balanced source of macronutrients, including carbohydrates, proteins, and fats. They are also rich in essential minerals, vitamins, and dietary fiber, which contribute to energy supply, metabolic functions, and overall health. Beyond basic nutrition, cereals contain a variety of bioactive compounds, such as polyphenolic antioxidants, that may support physiological functions and help in mitigating chronic diseases. From a nutritional perspective, Swayanjatha demonstrates a balanced macronutrient composition that falls within the typical range reported for cereal grains.

The moisture content was observed around 10–11%, while crude protein ranged approximately between 12–13%, indicating a comparable protein content compared to other cereals. The crude fat content was relatively low, around 3–4%, which is consistent with most cereal grains, whereas total carbohydrate content was notably high, approximately 80–81%, confirming its role as an energy-rich food source. Crude fiber content, recorded around 1.5–2.0%, contributes to digestive health and may aid in glycemic regulation. In addition, ash content, ranging from 1.5–2.0%, reflects the presence of essential mineral constituents. Overall, these findings showed that the nutritional profile of Swayanjatha aligns well with other cereal nutritional ranges, supporting its potential as a valuable dietary grain.

Cereal grains are known to contain bioactive compounds, particularly phenolic constituents, which contribute to their antioxidant potential. In general, the antioxidant capacity of cereals ranges from low to high levels depending on the grain type and pigmentation. In the present study, Swayanjatha demonstrated a moderate level of total polyphenolic content (TPC).



The Ferric Reducing Antioxidant Power (FRAP) assay reflected a moderate reducing capacity, suggesting its ability to donate electrons and act as an antioxidant. Similarly, the 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity showed a moderate free radical scavenging capacity compared to pigmented cereals. Overall, these results showed that the bioactive properties of Swayanjatha fall within the moderate range typically observed in cereal grains, highlighting its potential as a functional food with health-promoting properties.

Furthermore, Swayanjatha demonstrated moderate to notable concentration-dependent anti-inflammatory activity via nitric oxide (NO) radical and superoxide (O_2^-) radical scavenging assays, indicating its potential to mitigate oxidative stress. Additionally, studies on diabetes-related functional assays are currently in progress to evaluate their potential effects on diabetes and its complications management.

Considering these findings, Swayanjatha can be identified as a nutritionally valuable and bioactive traditional food grain with potential applications in modern dietary practices. Its incorporation into food systems could contribute to improved health outcomes while also supporting the conservation of indigenous food resources and agricultural biodiversity in Sri Lanka. Additionally, there is considerable potential for the development of functional foods and value-added products using this traditional food grain.

This research was initiated and conducted at the Department of Agricultural Technology, Faculty of Technology, University of Colombo, in collaboration with the Industrial Technology Institute (ITI) and Field Crops Research and Development Institute, Mahailuppallama, Sri Lanka. The research activities were carried out by Ms. JVKA Sajeewani under the supervision of Prof. WKSMAbeyssekera (Principal Supervisor & Head of the Department of Agricultural Technology, Faculty of Technology, University of Colombo), Ms. HHK Achala (Research Scientist, Biotechnology Section, Industrial Technology Institute), and Dr. UMA Kumara (Senior Lecturer, Department of Agricultural Technology, Faculty of Technology, University of Colombo). The Samples were provided by Mr. DCMSI Wijewardena, Assistant Director of Agriculture (Research), Field Crops Research and Development Institute, Mahailuppallama, Sri Lanka.

References:

- Aweya, J.J., Sharma, D., Bajwa, R.K., Earnest, B., Krache, H. and Moghadasian, M.H., 2025. Ancient grains as functional foods: integrating traditional knowledge with contemporary nutritional science. *Foods*, 14(14), p.2529. <https://doi.org/10.3390/foods14142529>
- Gani, A., Wani, S.M., Masoodi, F.A. and Hameed, G., 2012. Whole-grain cereal bioactive compounds and their health benefits: a review. *Journal of Food Processing & Technology*, 3(3), p.146. <https://doi.org/10.4172/2157-7110.1000146>
- Jocelyne, R.E., Béhiblo, K. and Kouakou, A.E., 2020. Comparative study of nutritional value of wheat, maize, sorghum, millet, and fonio: some cereals commonly consumed in Côte d'Ivoire. *European Scientific Journal*, 16(21), pp.118-. <https://doi.org/10.19044/esj.2020.v16n21p118>
- Mwendwa, F., 2025. Oxidative stress in non-communicable diseases: a unified pathogenic link and target for therapeutic intervention. *Eurasian Experiment Journal of Biological Sciences*, 6(2).
- Sajeewani, J.V.K.A., Achala, H.H.K., Abeysekera, W.K.S.M., Kumara, U.M.A. and Wijewardena, D.C.M.S.I., 2025. Molecular identification and selected nutritional and bio-active properties of Swayanjatha: a traditional food grain in Sri Lanka. In: *Proceedings of the Annual Research Symposium 2025*, Faculty of Technology, University of Colombo, Sri Lanka, p.339.



Why Stress Makes Us Crave Comfort Food???

It's been a long and stressful day. Deadlines are piling up, work feels overwhelming, and by the time you finally get a moment to breathe, you feel mentally exhausted. On the way home, you suddenly feel an intense craving, maybe for a piece of chocolate, a slice of cake, or a packet of crispy snacks.

Many of us have experienced moments like this. When life becomes stressful, our eating habits often change. We may reach for foods that are sweet, salty, or rich in fat, even if we were not particularly hungry a few minutes earlier.

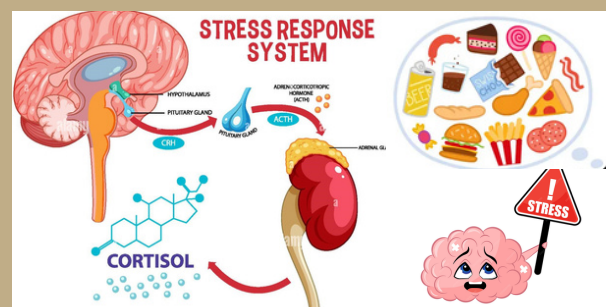
But why does this happen? Why does stress make us crave certain foods? The answer lies in the close connection between our mind, our body, and the food we eat.



Ms. Nimashi A. Wijerathne
Registered Dietitian/Nutritionist
Asiri Hospital Kandy

Stress is a normal part of life. Whether it is related to work, studies, family responsibilities, or unexpected challenges, everyone experiences stress at some point. When we feel stressed, the body activates what is known as the 'fight-or-flight' response. This response prepares the body to deal with perceived threats by releasing stress hormones such as adrenaline and cortisol. Cortisol, often called the stress hormone, plays an important role in regulating appetite. When cortisol levels increase, our appetite may increase as well.

At the same time, the brain begins to look for quick sources of energy. This is why stressful situations often lead to cravings for foods that are high in sugar or fat. These foods provide quick energy and can also trigger the release of certain chemicals in the brain that temporarily improve mood. In other words, when we feel stressed, our brain may gently push us toward what we commonly call 'Comfort foods'.



Comfort foods are usually foods that make us feel good emotionally. For many people, these may include sweets, fried snacks, biscuits, chocolates, or fast foods. These foods tend to be high in sugar, fat, or refined carbohydrates. When we eat them, they can stimulate the release of chemicals such as serotonin and dopamine, which are associated with feelings of pleasure and relaxation. This is one reason why, after eating something sweet or indulgent, we may feel temporarily better. However, the effect is often short-lived. Once the initial comfort fades, the underlying stress or emotions may remain. If this pattern continues frequently, it may develop into a habit of using food as a way to cope with emotions.

One helpful way to understand stress eating is to recognise the difference between physical hunger and emotional hunger. Physical hunger is the body's natural signal that it needs nourishment. It develops gradually and can be satisfied with a variety of foods. Emotional hunger, however, is often triggered by feelings rather than by the body's need for energy. Physical hunger usually develops slowly, can be satisfied with many types of food and stops once you feel full. On the other hand, emotional hunger often appears suddenly, involves cravings for specific comfort foods and may continue even when you are already full. Emotional hunger may arise from feelings such as stress, boredom, sadness, loneliness, or even fatigue. Learning to recognise these differences can help people become more aware of their eating habits.

In today's busy world, stress eating has become quite common. Long working hours, demanding schedules, and constant responsibilities can make it difficult to maintain healthy eating habits. Many people notice that during stressful periods they tend to consume more sugary tea, coffee, sweets like biscuits, cakes, chocolate and also fried snacks, fast foods. These foods are usually easy to access and provide quick satisfaction, especially when time and energy are limited. Having these foods occasionally is perfectly normal. However, when they become the main way of coping with stress, they can gradually lead to unhealthy eating patterns and unwanted weight gain.

The good news is that stress eating is something we can learn to manage. The first step is simply becoming aware of the connection between our emotions and our food choices. Sometimes, pausing for a moment before eating can make a big difference. Asking yourself a simple question, such as, "Am I truly hungry, or am I feeling stressed?" can help bring awareness to the situation. This small pause allows us to respond more thoughtfully rather than reacting automatically.

Managing stress eating does not mean completely avoiding your favourite foods. Instead, it involves developing healthier habits that support both the body and the mind. Eating regular, balanced meals is one strategy, as skipping meals can make cravings stronger later in the day. A balanced diet includes whole grains, protein, vegetables, and fruits, and it helps maintain stable energy levels and reduces sudden cravings.

Staying hydrated is also essential, as thirst can sometimes be mistaken for hunger, and drinking enough water throughout the day can help maintain energy and reduce unnecessary snacking. It is also helpful to find other ways to cope with stress, as food is not the only source of comfort. Activities such as taking a short walk, listening to music, talking with a friend, or practising relaxation techniques can help reduce stress without relying on food. When cravings do appear, choosing healthier comfort foods can still provide satisfaction, such as fruits with yoghurt, nuts and seeds, smoothies, whole grain snacks, or small portions of dark chocolate, as these options provide nutrients that support both physical and mental health.

Food is more than just fuel for the body. It is closely connected to our emotions, habits, and daily experiences. It is therefore not surprising that stress sometimes influences the foods we choose. The important thing is not to feel guilty about occasional indulgences, but to develop awareness of our eating patterns and learn healthier ways to respond to stress. By maintaining a balanced diet, practising mindful eating, and finding positive ways to manage stress, we can support both our physical health and our emotional well-being.

After all, caring for our health is not only about what we eat, but also about how we care for our minds.

References:

- Campos, A., Port, J. D., & Acosta, A. (2022). Integrative Hedonic and Homeostatic Food Intake Regulation by the Central Nervous System: Insights from Neuroimaging. *Brain sciences*, 12(4), 431. <https://doi.org/10.3390/brainsci12040431>
- Reichenberger, J., Pannicke, B., Arend, A. K., Petrowski, K., & Blechert, J. (2021). Does stress eat away at you or make you eat? EMA measures of stress predict day to day food craving and perceived food intake as a function of trait stress-eating. *Psychology & Health*, 36(2), 129-147. <https://doi.org/10.1080/08870446.2020.1781122>
- Rudenga, K. J., Sinha, R., & Small, D. M. (2013). Acute stress potentiates brain response to milkshake as a function of body weight and chronic stress. *International journal of obesity* (2005), 37(2), 309-316. <https://doi.org/10.1038/ijo.2012.3>
- 1.Tomiyama, A. J., Dallman, M. F., & Epel, E. S. (2011). Comfort food is comforting to those most stressed: evidence of the chronic stress response network in high stress women. *Psychoneuroendocrinology*, 36(10), 1513-1519. <https://doi.org/10.1016/j.psyneuen.2011.04.005>
- 2.Wren, A. M., & Bloom, S. R. (2007). Gut hormones and appetite control. *Gastroenterology*, 132(6), 2116-2130. <https://doi.org/10.1053/j.gastro.2007.03.048>





The Role of Natural Antioxidants in Promoting Health and Extending Food Shelf Life

In recent years, there has been growing interest in the use of natural antioxidants in both human nutrition and food preservation. Oxidative stress, which results from an imbalance between free radicals and antioxidants in the body, is closely associated with chronic diseases such as cardiovascular diseases, diabetes, cancer, and age-related disorders. Antioxidants play a vital role in neutralizing these free radicals, thereby protecting cells and maintaining normal physiological functions.

Natural antioxidants are abundantly found in fruits, vegetables, nuts, and seeds, and they are increasingly being explored as safer alternatives to synthetic preservatives in the food industry. Their ability to prevent oxidation is especially important in maintaining the quality and shelf life of food products such as edible oils.



Ms. Jemika Ponnuthurai
Department of Agricultural Chemistry
(Food Science)
Faculty of Agriculture
University of Jaffna

Understanding Antioxidants

Antioxidants are bioactive compounds that inhibit or delay oxidation processes by neutralizing free radicals. These free radicals are highly reactive molecules that can damage cellular components, including lipids, proteins, and DNA. Natural antioxidants such as polyphenols, flavonoids, vitamin C, vitamin E, and carotenoids are widely present in plant-based foods. Fruits like berries, citrus fruits, guava, and mango, as well as several underutilized tropical fruits, are particularly rich in these beneficial compounds. The consumption of such antioxidant-rich foods is essential for maintaining overall health and preventing oxidative damage in the body.

Natural Antioxidants and Human Health

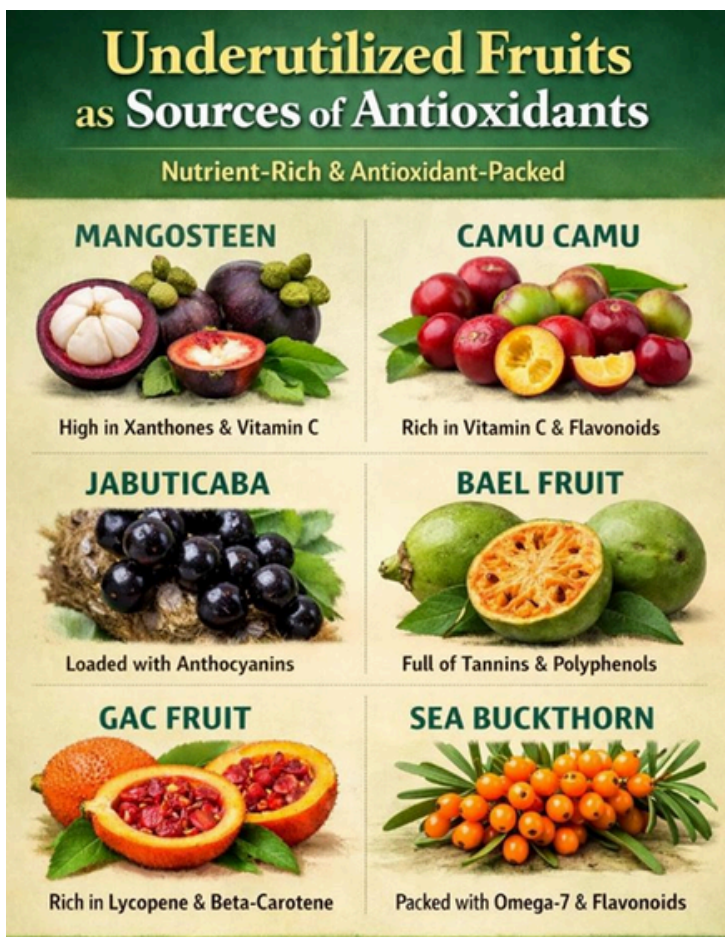
Regular intake of antioxidant-rich foods has been strongly linked to improved health outcomes. Antioxidants contribute significantly to reducing the risk of chronic diseases by minimizing oxidative stress and protecting cellular structures. They also play an important role in strengthening the immune system, helping the body to fight infections and inflammation more effectively. Furthermore, antioxidants are known to slow down the aging process by reducing cellular damage, thereby promoting longevity and overall well-being. Compounds such as carotenoids and flavonoids also support skin and eye health by protecting against environmental stress and improving visual function. Therefore, incorporating a variety of fruits and vegetables into the daily diet is essential for ensuring adequate antioxidant intake.

Natural Antioxidants in Food Preservation

In addition to their health benefits, natural antioxidants have significant applications in food preservation. Oxidation is one of the primary causes of food deterioration, particularly in fat-rich foods such as edible oils. This process leads to rancidity, off-flavors, nutrient loss, and reduced shelf life. Traditionally, synthetic antioxidants like BHA and BHT have been used to prevent oxidation; however, concerns regarding their safety have led to increased interest in natural alternatives. Plant-derived antioxidants obtained from fruits, herbs, and spices have shown great potential in delaying lipid oxidation and maintaining food quality. These natural compounds act by inhibiting free radical formation and slowing down oxidative reactions, thereby enhancing the stability and safety of food products.

Underutilized Fruits as Sources of Antioxidants

Underutilized fruits, particularly those found in tropical and subtropical regions, represent a rich yet largely untapped source of natural antioxidants with significant potential for improving human health and supporting sustainable development. As illustrated in the image, fruits such as mangosteen, camu camu, jabuticaba, bael fruit, gac fruit, and sea buckthorn are packed with diverse bioactive compounds, including xanthenes, flavonoids, anthocyanins, tannins, carotenoids, and essential fatty acids, all of which contribute to strong antioxidant activity. Similarly, other lesser-known fruits like wood apple, bilimbi, Indian gooseberry and tamarind are abundant in polyphenols and vitamins that help neutralize free radicals, reduce inflammation, and support immune function. These properties make them valuable in preventing chronic diseases such as cardiovascular disorders, diabetes, and cancer.



Beyond their health benefits, promoting the cultivation and utilization of these fruits can enhance dietary diversity, strengthen food security, and provide economic opportunities for rural and indigenous communities through value-added products such as functional foods, nutraceuticals, pharmaceuticals, and cosmetics. Despite their potential, these fruits remain underexploited due to limited research, lack of awareness, and inadequate commercialization strategies. Therefore, increased scientific investigation, improved processing technologies, and greater market promotion are essential to fully harness their nutritional, medicinal, and economic value.

Application in Edible Oils

Edible oils are highly susceptible to oxidative degradation during processing, storage, and cooking. Lipid oxidation results in the formation of harmful compounds that negatively affect the flavor, aroma, and nutritional value of oils. The incorporation of natural antioxidants into edible oils has been identified as an effective strategy to enhance their oxidative stability. These antioxidants act as protective agents that inhibit the formation of free radicals and slow down the oxidation process. As a result, the shelf life of oils can be extended, and their quality can be maintained for a longer period. Additionally, the use of natural antioxidants improves consumer acceptance, as there is a growing preference for clean-label and naturally preserved food products.



Future Perspectives

The increasing demand for natural and functional foods has highlighted the importance of plant-based antioxidants in both nutrition and food technology. Research on underutilized fruits and innovative extraction techniques offers promising opportunities for developing sustainable food preservation methods. Advances in food processing and analytical techniques will further enhance the application of natural antioxidants in various food systems. Encouraging the consumption of antioxidant-rich foods and supporting research in this area will contribute to improved public health, food security, and sustainable development.

Conclusion

Natural antioxidants play a crucial role in promoting human health and preserving food quality. Their ability to neutralize free radicals helps in reducing the risk of chronic diseases, strengthening the immune system, and supporting overall well-being. At the same time, their application in food systems, particularly in edible oils, provides a safer and more sustainable alternative to synthetic preservatives. Exploring underutilized fruits as sources of antioxidants presents a valuable opportunity to enhance nutrition, support local economies, and improve food stability. Therefore, promoting the use of natural antioxidants is essential for building healthier and more sustainable food systems.

References:

- Shahidi, F., & Zhong, Y. (2015). Measurement of antioxidant activity. *Journal of Functional Foods*, 18, 757–781.
- Brewer, M. S. (2011). Natural antioxidants: Sources, compounds, mechanisms of action, and potential applications. *Comprehensive Reviews in Food Science and Food Safety*, 10(4), 221–247.
- Prior, R. L., Wu, X., & Schaich, K. (2005). Standardized methods for the determination of antioxidant capacity and phenolics in foods and dietary supplements. *Journal of Agricultural and Food Chemistry*, 53(10), 4290–4302.
- Sies, H. (2017). Hydrogen peroxide as a central redox signaling molecule in physiological oxidative stress. *Redox Biology*, 11, 613–619.
- Pokorný, J. (2007). Are natural antioxidants better and safer than synthetic antioxidants? *European Journal of Lipid Science and Technology*, 109(6), 629–642.
- Rice-Evans, C., Miller, N., & Paganga, G. (1997). Antioxidant properties of phenolic compounds. *Trends in Plant Science*, 2(4), 152–159.



Micronutrients

විටමින් C අඩුව අප තුළ පවතින්නේ කොලරජන් නිශ්පාදනය එනිසා අඩුවෙන්නේ අකලට තමයි අප සම වියපත් වෙන්නේ බොරුවට මුදල් කන්දකි වියදම් වන්නේ

විටමින් A අඩුව අප තුළ පවතිනවා ප්‍රතිශක්තිය අපේ ටික ටික අඩු වෙනවා ඇස්වල සෞඛ්‍යයට බාධා ඇතිවෙනවා සම හා ඇස්ටි හට බලපෑමක් වෙනවා

විටමින් D අඩුව සැගවී පවතින්නේ ඇස්ටි වල ඝනත්වය අප අඩුවෙන්නේ ප්‍රතිශක්තිය උගනව ලෙඩ වැඩිවෙන්නේ ආහාරයන් හිරු එළියත් සලකන්නේ

යකඩ අඩු උනොත් ප්‍රශ්නය දැඩි වෙනවා රුධිරයේ කාන්‍ය ටික නම් අඩපණ වෙනවා ශක්තිය හානි වී දුර්වල බව වෙනවා යකඩෙන් තැනුව සිරුරත් මලකඩ කනවා

සින්ක් ලෝහයයි අප හට අඩුවෙන්නේ රස හා සුවද දැනෙනා බව අඩු වෙන්නේ ප්‍රතිශක්තිය අඩුයි ලෙඩ නෑ සුවවෙන්නේ සින්ක් වල වටිනාකම දැනගන්නේ

කුඩා නිසා අවධානය අඩුවෙන්නේ විටමින් සහ බනිප් අඩුවෙනි අරගන්නේ හිත් සාරය මහ සාරයද පරදන්නේ නුවණැති ලෙසින් පිගාන තෝරාගන්නේ.



Mr. Dinuka Bandara
 Technical Advisor- Integrated Nutrition
 World Vision Lanka



Small Millets Kali: A Simple Traditional Breakfast for Better Health



The Growing Health Challenge

Non-communicable diseases (NCDs) such as diabetes, hypertension, obesity, and heart disease are rising rapidly in Sri Lanka and across the globe. A major reason behind this trend is our changing lifestyle particularly unhealthy eating habits and reduced physical activity.

Today's diets are often high in refined carbohydrates but low in dietary fibre. Over time, this imbalance increases the risk of many chronic diseases. But what if part of the solution already exists within our traditional food culture?

Rediscovering the Power of Small Millets

Small millets such as little millet (Samai) and pearl millet (Kambu) were once staple foods in our daily meals. However, their use has gradually declined over time.

These traditional grains are nutritional powerhouses and offer multiple health benefits:

- Rich in dietary fibre, supporting digestion and gut health
- A good source of plant-based protein
- High in essential minerals such as iron, calcium, and magnesium
- Contain antioxidants that help protect the body from disease
- Possess a low glycaemic index, aiding blood sugar control

According to Siddha medicine, millets help strengthen the body, improve digestion, and maintain internal balance.

Bringing Tradition Back: Small Millets Kali

Kali is a traditional, thick porridge widely consumed in Sri Lanka. It is valued for its ability to provide sustained energy and nourishment.



Dr. S. Sathish
Assistant Lecturer
Faculty of Siddha Medicine
University of Jaffna

In this study, a healthier version of Kali was developed using:

- Little millet flour
- Pearl millet flour
- Palm jaggery
- Coconut milk
- Natural spices such as cumin, pepper, and cardamom

This combination not only enhances flavour but also significantly improves the nutritional value of the dish.

What Was Done?

Different formulations of millet-based kali were prepared by varying the proportions of millet flours.

A group of 50 participants evaluated the samples based on:

- Taste
- Aroma
- Texture
- Appearance
- Overall acceptability

The most preferred preparation was then further analyzed to assess its nutritional quality and safety

Key Findings

The most preferred millet kali:

- Had a pleasant taste and texture
- Provided adequate energy and protein
- Contained important minerals essential for body functions
- Showed antioxidant properties
- Was safe for consumption when prepared hygienically

These findings highlight that healthy foods can also be tasty and widely accepted.



Why Include Millet Kali in Your Diet?

Adding small millets, Kali to your daily routine can:

- Improvedigestion due to high fibre content
- Help regulateblood sugar levels
- Support heart health
- Reduce the risk of lifestyle-related diseases
- Provide long-lasting energy
- Promote satiety and assist in weight management

A Practical Step Towards Healthy Living

Reintroducing traditional foods like millet kali is a simple yet effective way to improve daily nutrition.

It is:

- Affordable and locally available
- Easy to prepare
- Culturally familiar
- Suitable for all age groups

Even replacing a few meals each week with millet-based foods can make a meaningful difference to yourhealth.

Final Message

Modern health challenges require practical and sustainable solutions. Small millets, Kali is a perfect example of how traditional knowledge and modern nutrition can work together.

By making small, consciouschanges in our daily diet, we can take an important step toward preventingnon-communicable diseases and improving overall well-being.

Further Reading

- 1.Bhat S et al. (2018) – Significance of small millets in nutrition and health
- 2.FAO (2022) – International Year of Millets
3. Jayaweera DMA (1982) – Medicinal Plants of Sri Lanka
- 4.Traditional Siddha literature



Hidden Hunger Speaks

දරුවන්ගේ වර්ධනය විකසනය අඩුවෙන්ම හැකිම මට පිරි පිරුනු පිගානෙන් සැඟවෙන්ම උස බරින් මනිනු බැ දැනිම මම සැඟවෙන්ම සැඟවෙවිම කුසගින්න මමයි ඔබ දැනගන්ම.



Mr. Dinuka Bandara
 Technical Advisor- Integrated Nutrition
 World Vision Lanka



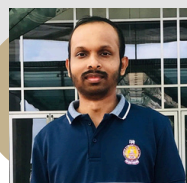


When “All You Can Eat” Becomes “More Than We Need”: Rethinking Buffet Culture from Nutrition and Sustainability Perspectives

All-you-can-eat (AYCE) buffets, often seen as greater hospitality in high-end hotels, offer abundance, variety, and freedom of choice. For many, it is an amazing experience and an opportunity to taste multiple cuisines in a single meal, too. But there is a hidden, growing concern. When unlimited access meets human behavior, “all you can eat” can easily become “more than we need”, raising important questions about both nutritional health and environmental sustainability.

Buffet dining is more than just a type of food service; it reflects a changing food environment. In nutrition science, these kinds of settings are often described as “obesogenic environments”, environments that promote excessive calorie intake and weight gain. They expose people to an excess of food, larger portion sizes, and continuous visual stimulation in contrast to typical meals. People are encouraged to eat beyond hunger in this “different from usual” eating situation, which is frequently motivated by curiosity, value perception, or just simple temptation. The emergence of buffet culture in Sri Lanka is also associated with growing urbanization, tourism, the impact of international dining habits, and social media dining trends, all of which further integrate these patterns into daily life.

The psychology of choice is one of the main reasons buffets encourage overconsumption. A wide range of foods, from processed meats and fried foods to sugary desserts, increases hunger and overrides the body's natural satiety signals.



Mr. Y. Sasanka Dilshan de Silva
Undergraduate
Department of Food Science and Technology
Wayamba University of Sri Lanka

Consumers often feel compelled to try a bit of everything, which results in a cumulative calorie intake that is far higher than that of a typical meal. Also, the perception of value, wanting to “get one’s money’s worth”, encourages repeated servings and larger portions. Large platters, unlimited refills, and eye-catching food displays all lead to this behavior.

From a nutritional perspective, buffet meals are often characterized by high levels of saturated fats, refined carbohydrates, added sugars, and sodium. Frequent exposure to such dietary patterns can increase long-term health concerns, such as weight gain, obesity, type 2 diabetes, hypertension, and cardiovascular diseases. Most importantly, these risks are not only a result of food choices but also of the environment in which those choices are made.





Lack of mindful eating is a critical but often overlooked characteristic of buffet overconsumption. Identifying hunger and fullness cues, savoring food, and being mindful of portion sizes are all components of mindful eating. However, studies show that frequent buffet dining is linked to decreased awareness during eating. Attention moves from internal signals to exterior stimuli in an environment full of distractions, such as crowds, conversations, and an overwhelming choice of food. People may eat constantly as a result, losing track of what and how much they eat. Reintroducing mindful eating practices in such environments is essential for balance and promoting healthier dietary habits.

One prominent psychological feature of buffet culture is the concept of self-kindness. A lot of people see buffet dining as a treat or a reward a chance to relax, celebrate, or temporarily break from regular dietary restrictions. Although this viewpoint can improve mental health, it might also promote binge eating. This leads to a paradox where long-term physical health is subordinated to immediate psychological fulfillment (I deserve this). But true self-kindness should include thoughtful self-care in addition to instant gratification. Maintaining both physical and mental well-being requires finding a balance between moderation and enjoyment.

Buffet environments present significant challenges to self-regulation as well. People are more likely to give up on their dietary goals, eat restricted foods, and eat larger portions when there is a food surplus. The sheer variety and all-you-can-eat nature of buffets can trigger binge-eating behaviors, causing individuals to ignore fullness cues and continue eating large amounts of food in a short period, which increased calorie intake persists past a single meal.

Overeating, defined as consuming more energy than the body requires for metabolic functions and daily activity, has significant implications for overall health. While occasional indulgence is safe, excessive consumption over time causes excess calories to be stored as body fat, which eventually contributes to weight gain and obesity. This condition increases the risk of non-communicable diseases such as cardiovascular disease, type 2 diabetes, hypertension, and certain cancers. Physiologically, chronic overeating disrupts key metabolic processes, including insulin sensitivity, glucose regulation, and lipid metabolism, potentially leading to insulin resistance, dyslipidemia, and metabolic syndrome. Additionally, large and frequent meals can strain the digestive system, causing discomfort such as bloating, indigestion, and acid reflux. Beyond physical health, overeating also affects psychological well-being, often triggering guilt, stress, and emotional eating patterns, which may further reinforce unhealthy dietary habits. Thus, eating mindfully and maintaining a balanced diet are crucial for supporting general physical and mental health as well as preventing metabolic disorders.

Beyond nutrition, buffet culture raises some challenges regarding food waste, making it a critical sustainability issue. Globally, approximately one-third of all food produced, around 1.3 billion tonnes, is wasted each year. The hospitality sector contributes significantly to this problem. Studies suggest that hotels generate between 0.8 and 1.2 kilograms of food waste per guest daily, much of which comes from buffet services. In these environments, guests often leave food uneaten on their plates, and overproduction is common to maintain visual abundance.

Eliminating the buffets is not the solution to these problems. Alternatively, a more sustainable and well-rounded strategy could be used. Reducing portion sizes, rearranging buffet layouts to prioritize healthier options, and enhancing demand forecasting to reduce overproduction are all some of the practical strategies that hotels can put into practice. Smart monitoring systems and other technological tools can make it easier to monitor and control kitchen waste. Programs for staff awareness and training are equally important to ensuring that food safety and service quality are not compromised by waste reduction. Customers are important as well. Simple practices such as taking smaller portions, returning for additional servings only if needed, and being mindful of food choices can significantly reduce both overconsumption and waste. Emphasizing fruits, vegetables, and balanced meals, while limiting high-fat and high-sugar items, can improve the nutritional quality of buffet dining. In the end, mindful eating turns the buffet experience into one of deliberate enjoyment rather than excess.



Nature's Pharmacy: Can Papaya Leaf Extract Help Dengue Patients?

Dengue is a mosquito-borne disease affecting millions worldwide, mainly in tropical and subtropical regions. The dengue virus is transmitted to humans through bites from infected mosquitoes, mainly *Aedes aegypti* and *Aedes albopictus*. Symptoms can range from fever, headaches, muscle pain, and a decrease in platelet count to more severe conditions such as bleeding, liver problems, shock, and even death.

The fresh leaves of the tropical papaya plant are used to make papaya leaf extract. The leaves are rich in natural compounds, including antioxidants, enzymes, flavonoids, vitamin C, and carotenoids, which help the body respond to infections. In patients with dengue, papaya leaf extract may help increase platelet counts, stimulate immune cells, improve blood health, support liver function, and relieve symptoms such as fever, fatigue, and body pain. Papaya leaf extract does not cure dengue virus, but it can help relieve symptoms and support the body during recovery.



Ms. J.A.D.C.N. Jayanetti
Cardiff Metropolitan University, UK
International College of Business and Technology
Colombo Campus



Dr. E.J. Eugene
Senior Lecturer
Cardiff Metropolitan University, UK
International College of Business and Technology
Colombo Campus

How is Papaya Leaf Extract Made?

Papaya leaf extract (PLE) can be prepared in different ways depending on the study. Most methods begin with fresh or mature papaya leaves.

The basic steps include:

- Washing the leaves with clean or distilled water
- Cutting them into small pieces
- Crushing or blending into a paste
- Filtering to obtain the liquid extract

Different forms of PLE are used, such as:

- Fresh leaves only
- Leaves mixed with water
- Freeze-dried extract

The amount of active compounds in PLE depends on how it is prepared. Fresh leaves can give inconsistent results, while adding water dilutes the extract, lowering the concentration of active compounds and reducing their effectiveness.

Papaya leaves contain important enzymes such as papain and chymopapain, which help support recovery in dengue patients. Freeze-drying helps preserve these enzymes by removing water at very low temperatures without damaging their structure. This process keeps the enzymes stable and active. Because of this, freeze-dried papaya leaf extract maintains a higher concentration of active compounds and is considered more effective.

- PLE → Variable compounds → **Moderate effectiveness**
- PLE + water → Diluted compounds → **Lower effectiveness**
- Freeze-dried → Preserved enzymes + Concentrated compounds → **Higher effectiveness**

Effect of Papaya Leaf Extract in Males and Females

Researchers studied whether PLE works differently for men and women with dengue.

Key findings from the research:

- **Increased platelet counts:** A case report of a male dengue patient showed platelet counts rising from 13,000 to 138,000/micro-liter over five days of PLE treatment.
- **Study of 400 patients (275 males, 125 females):** Daily PLE capsules significantly increased platelet counts starting from the third day of treatment.
- **Early recovery:** In 500 patients (380 males, 120 females), those treated with PLE experienced faster increases in platelet counts and reduced hospitalization compared to the control group.
- **Immune support:** PLE increased WBC counts and stimulated genes responsible for platelet production (ALOX12, PTAFR) in both males and females.
- **Mild side effects:** Some patients experienced nausea, vomiting, hiccups, or loose stools, but these were temporary.

The results show that PLE helps both men and women recover faster by boosting platelets and white blood cells. Side effects were usually mild, and the extract worked equally well for both genders.



Effect of Papaya Leaf Extract in Adults (18–60 Years)

Researchers studied how papaya leaf extract works in adults aged 18–60 years with dengue.

Key findings from the research:

- **Rapid platelet recovery:** In a study of adult patients with severe thrombocytopenia ($\leq 30,000/\mu\text{L}$), platelet counts increased from 19,000 to 48,200/ μL within 5 days after PLE treatment.
- **Improved blood parameters:** In patients aged 22–60 years, platelet counts increased from 118 to 182.6, while white blood cells, haemoglobin, and haematocrit levels also improved after treatment.
- **Better outcomes with PLE:** In a study of 165 adult patients, those who received PLE along with standard treatment showed a greater increase in platelet counts by day 7 compared to those receiving only standard care.
- **High patient usage:** Among 241 adult dengue patients, 131 individuals used papaya leaf extract, showing its widespread use as a supportive treatment.
- **Reduced oxidative stress:** In patients aged 20–40 years, PLE treatment for 15 days improved platelet count and other blood parameters, while also reducing oxidative stress.
- **No major effect on hospital stays:** Some studies found no significant difference in hospital stay duration, even though platelet counts improved.

Studies on adults aged 18–60 years show that PLE can help improve platelet counts and support recovery in dengue patients. The results may vary between individuals, but overall, most studies report positive effects. It is also seen that younger adults are more likely to use PLE, while older adults tend to be more careful because of other health conditions.

Conclusion

The use of papaya leaf extract in dengue management presents a promising supportive approach, particularly in improving platelet counts and aiding recovery. While several studies report beneficial outcomes, its effectiveness may vary depending on preparation methods and individual patient factors. PLE should not be used as a standalone treatment, as it does not directly target the dengue virus. Instead, it should be considered as a complementary option alongside standard medical care. Therefore, its use must be guided by evidence and clinical judgment, with further research needed to establish its safety, dosage, and overall effectiveness.



References:

- Anpuchelvy, S. and Sritharan, G. (2019). Role of papaya leaf juice in dengue fever-a case study.
- Asghar, M.S., Hassan, M., Rasheed, U., Jawed, R., Khan, N.A., HaiderKazmi, S.J. and Khan, S.A. (2020). A study on investigating the role of Papaya extracts in the management of acute thrombocytopenia in Dengue fever, is there any clinical significance. Merit Res. J, 8, pp.485-491.
- Bere, A.W., Mulati, O., Kimotho, J. and Ng'ong'a, F. (2021). Carica papaya leaf extract silver synthesized nanoparticles inhibit dengue type 2 viral replication in vitro. Pharmaceuticals, 14(8), p.718.
- Halstead, S.B. (2019). Dengue hemorrhagic fever. In CRC Handbook of Viral and Rickettsial Hemorrhagic Fevers (pp. 85-94). CRC Press.
- Hettige, S., Pushpakumara, J., Wanigabadu, L.U., Hettige, E.M.R., Kottege, A., Jayaratne, S.D. and Saman, G. (2020). Research Open. J Clin Res Med, 3(3), pp.1-7.
- Ismail, I.S., Hairon, S.M., Yaacob, N.M., Besari, A.M. and Abdullah, S.A.R.I.M.A.H. (2019). Usage of traditional and complementary medicine among dengue fever patients in the Northeast Region of Peninsular Malaysia. The Malaysian Journal of Medical Sciences: MJMS, 26(3), p.90.

- Jayasinghe, C.D., Gunasekera, D.S., De Silva, N., Jayawardena, K.K.M. and Udagama, P.V. (2017). Mature leaf concentrate of Sri Lankan wild type Carica papaya Linn. modulates nonfunctional and functional immune responses of rats. BMC Complementary and Alternative Medicine, 17(1), pp.1-14.
- Mohd Abd Razak, M.R., Norahmad, N.A., Md Jelas, N.H., Afzan, A., Mohamad Misnan, N., Mat Ripen, A., Thayan, R., Zainol, M. and Syed Mohamed, A.F. (2021). Immunomodulatory activities of Carica papaya L. leaf juice in a non-lethal, symptomatic dengue mouse model. Pathogens, 10(5), p.501.
- Sathyapalan, D.T., Padmanabhan, A., Moni, M., P-Prabhu, B., Prasanna, P., Balachandran, S., Trikkur, S.P., Jose, S., Edathadathil, F., Anilkumar, J.O. and Jayaprasad, R. (2020). Efficacy & safety of Carica papaya leaf extract (CPLE) in severe thrombocytopenia ($\leq 30,000/\mu\text{l}$) in adult dengue-Results of a pilot study. PLoS One, 15(2), p.e0228699.
- Siddique, O., Sundus, A., & Ibrahim, M. F. (2014). Effects of papaya leaves on thrombocyte counts in dengue--a case report. JPMA. The Journal of the Pakistan Medical Association, 64(3), 364-366.



*Don't forget to add fruits to your
Sinhala and Tamil New Year
Dining Table.....*



Behaviour Activation Therapy (BAT) for Improving Diet Quality in the Field of Nutritional Psychology



Ms. Mathusha Sabhanayakam
PhD Candidate
Edith Cowan University
Australia

Depression and low mood can feature centrally in dietary habits. Moderate quality of evidence shows that emotional states can dysregulate appetite, promoting the intake of high-calorie “comfort” foods, in turn increasing weight and subsequent risk of CVD and other non-communicable diseases.

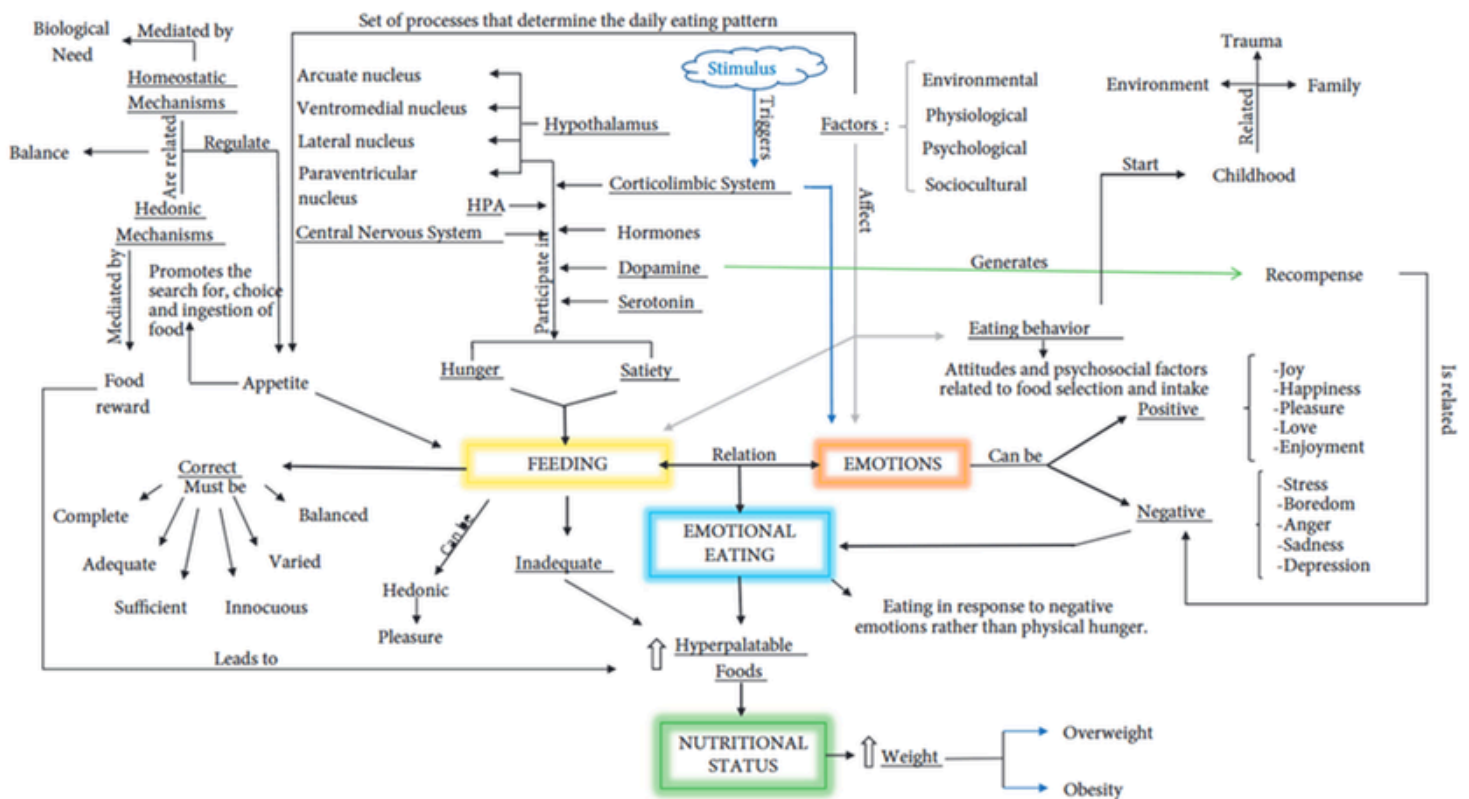


Figure 1. Relationship between emotions, eating behaviour, and nutritional status

Further, biological, psychological, and behavioural responses resulting from depression can influence eating behaviours and are summarised in **Figure 1**. In this context, biological responses involve Hypothalamus Pituitary Axis (HPA) dysregulation, chronic and/or low-grade inflammation, hyperactivation of reward brain regions promoting cravings for unhealthy high-calorie foods, impairing insulin sensitivity, and gut microbiota diversity.

Further, psychological responses such as overeating are a negative response to depression. Frequent overeating of unhealthy food is associated with poorer health and well-being, undermining motivation for healthy choices and perpetuating negative cycles of unhealthy eating. Lastly, behavioural responses such as low motivation or low energy can lead to poor meal planning, shopping, cooking, and increased consumption of ultra-processed foods high in added salt, sugar, and saturated fats. Behaviours associated with depression (e.g., sleep disturbances, physical inactivity, and social withdrawal) further worsen eating behaviour, where proper management of emotions through behaviour change therapies is effective in regulating emotional eating.



Further, the Mediterranean Diet (MedDiet) is a heart-healthy eating pattern based on traditional eating habits of people from countries bordering the Mediterranean Sea, including Spain, Italy, and Southern Greece. This plant-based diet is rich in fruits, vegetables, whole grains, legumes, nuts, seeds, and extra virgin olive oil, with fish and poultry consumed in moderate amounts, and limited red meat consumption.

The development and progression of depression share biological pathways (e.g., inflammation, oxidative stress, and Hypothalamic Pituitary Axis (HPA) dysregulation), where key components within the MedDiet (e.g., fibre, omega-3s, and polyphenols) contribute to the anti-inflammatory and antioxidant benefits associated with these biological pathways. Accordingly, the MedDiet is uniquely positioned to prevent and manage depression and its related effects on diet quality.

Behavioural activation (BA) therapy originated from cognitive behavioural therapy (CBT), which focuses on positive behavioural change. A recent Cochrane review found high-certainty of evidence that BA reduces depressive symptoms in adults compared with usual care or wait-list controls, and moderate- to high-certainty evidence that its effects are similar to those of CBT. BA aims to (a) provide psychoeducation, (b) improve engagement in pleasurable activities, (c) reduce activities that sustain or risk depression, (d) identify positive and negative reinforcers for behaviour change, and (e) manage relapse. BA can be either simple (e.g., self-monitoring and activity scheduling) or complex (e.g., functional analysis or values-focused interventions), whereby therapy applies operant conditioning principles and begins with daily activity and mood monitoring, followed by scheduling of enjoyable activities to improve mood and prevent unhealthy habits.

Compared with CBT, BA is simpler, less resource-intensive, and can be delivered with much briefer training; just 5 days of BA training for junior staff produced outcomes non-inferior to CBT delivered by specialist therapists. Further, in contrast to BA, CBT, and pharmacotherapy mainly reduce negative affect, while improvements in positive affect/anhedonia remain limited. BA activates prefrontal and subcortical regions of the brain, improving pleasure with less time (66). Moderate certainty of evidence shows that internet-based BA is the most commonly practised type, with a similar effectiveness to face-to-face sessions.

Group-based BA is recommended as the primary treatment for mild or moderate depression, with principles that have recently been adapted to food and eating behaviours. Food-related BA (F-BA) is a novel approach to enhance diet quality and improve symptoms of depression, using BA strategies to change unhealthy eating habits and to encourage adherence to MedDiet eating patterns. F-BA can be delivered through in-person or web-based platforms and cater to individual or group therapies.

A significant trial called "**Mood Food Trial**" was designed in Europe to understand the function of F-BA to improve the diet quality among those with depression. It was proven that there is a positive effect of F-BA in order to improve the mood and dietary outcome. But still, there is a need for research on F-BA to test its effectiveness in different contexts, especially in low and middle-income countries.





Strengthening Protein and Nutrition Security in Sri Lanka

“Critical Role of Local Protein Sources in Improving Dietary Quality”

Sri Lanka is experiencing significant challenges in food and nutrition security due to economic instability, climate variability, and structural weaknesses in food systems. Although calorie availability has historically been adequate at the national level, dietary quality, particularly protein adequacy, remains a concern among vulnerable populations. Reduced access to animal-source foods, declining dietary diversity, and increasing food prices have heightened the risk of protein-energy malnutrition and micronutrient deficiencies.

This article highlights and synthesizes current evidence on protein and nutrition security in Sri Lanka and evaluates the role of locally available protein sources, including dairy, fisheries, poultry, legumes, and aquaculture, in strengthening dietary quality. Evidence indicates that nutrition-sensitive agricultural interventions, smallholder production systems, and policy-driven dietary diversification strategies can significantly enhance public health outcomes. Strengthening local protein systems is therefore critical to achieving sustainable nutrition security in Sri Lanka.

Food security is defined as a condition in which all people have physical, social, and economic access to sufficient, safe, and nutritious food that meets dietary needs for an active and healthy life (FAO, 2023). However, food security alone does not guarantee nutrition security. Nutrition security emphasizes not only food availability but also dietary quality, nutrient adequacy, and utilization (Herforth et al., 2020).



Ms. Kalaivizhi Varathanathan
Department of Animal Science
Faculty of Agriculture
University of Jaffna

Sri Lanka has historically achieved commendable progress in maternal and child health indicators relative to regional standards. Nevertheless, recent economic shocks beginning in 2022 have significantly disrupted household food access and affordability (World Bank, 2023). National and international assessments report increased food insecurity and a decline in dietary diversity, particularly among low-income households (WFP, 2023).



From www.unicef.org

Protein is an essential macronutrient required for tissue growth, immune function, hormone synthesis, enzymatic activity, and cognitive development (WHO, 2007). Inadequate protein intake, especially during pregnancy, childhood, and adolescence, can impair growth, reduce immunity, and compromise long-term productivity. Thus, ensuring adequate protein intake is central to improving public health outcomes.

Current Status of Malnutrition and Protein Intake in Sri Lanka

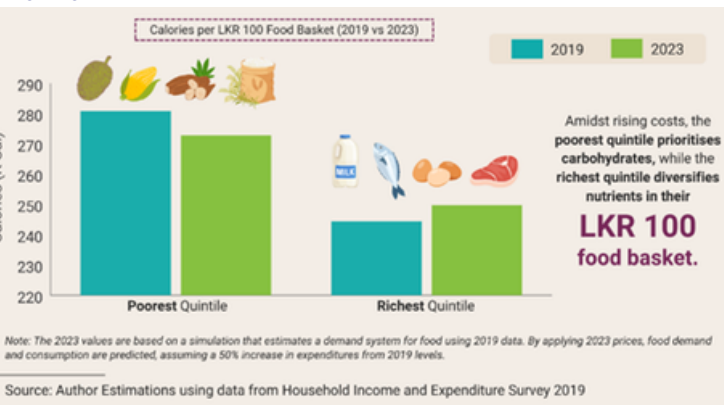


Figure 1 - Household Calorie Consumption in a Food Basket Worth LKR 100

Sri Lanka faces a “triple burden” of malnutrition:

1. Undernutrition (stunting and wasting in children)
2. Micronutrient deficiencies (particularly iron deficiency anemia)
3. Rising non-communicable diseases (NCDs) linked to poor diet quality

According to the Sri Lanka Demographic and Health Survey (DHS, 2016), approximately 17% of children under five were stunted, and 15% were underweight. Anemia remains prevalent among women of reproductive age and young children (Ministry of Health, 2022). Although updated nationwide surveys are ongoing, economic disruptions have likely exacerbated nutritional vulnerabilities (WFP, 2023).

Dietary patterns in Sri Lanka are heavily centered on rice and cereal-based foods, contributing substantially to caloric intake but often lacking adequate protein diversity (Jayawardena et al., 2012). During periods of economic hardship, households tend to reduce consumption of animal-source foods such as milk, fish, eggs, and meat due to higher costs (World Bank, 2023). This shift increases the risk of protein insufficiency and “hidden hunger,” characterized by micronutrient deficiencies despite adequate caloric intake (FAO, 2023).

Protein Quality and Its Importance in Human Nutrition

Protein quality depends on amino acid composition and digestibility. Animal-source foods typically provide complete proteins containing all indispensable amino acids in adequate proportions (FAO, 2013). In contrast, most plant proteins are limiting in one or more essential amino acids but can achieve adequate quality when combined appropriately.

High-quality protein contributes to:

- Linear growth in children
- Improved muscle maintenance

- Enhanced immune response
- Prevention of sarcopenia in elderly populations
- Better pregnancy outcomes

Animal-source foods also provide highly bioavailable micronutrients such as iron, zinc, calcium, vitamin B12, and essential fatty acids (Dror & Allen, 2011). For example, heme iron from animal foods has significantly higher absorption rates compared to non-heme iron from plant sources.

Thus, promoting adequate intake of both animal and complementary plant proteins is critical in improving overall dietary quality.

Role of Local Protein Sources in Sri Lanka

Dairy Sector

Milk and dairy products are rich sources of high-biological-value protein, calcium, vitamin B12, and riboflavin. Regular dairy consumption has been associated with improved bone mineral density and child growth outcomes (Haug et al., 2007). Sri Lanka’s dairy sector is dominated by smallholder farmers. However, domestic production meets only a portion of national demand, leading to reliance on imports. Strengthening local dairy systems through improved breeding, feeding, and management practices could enhance both farmer income and household nutrition security. Small-scale dairy farming also contributes to women’s economic empowerment, indirectly improving child nutrition outcomes (Ruel et al., 2018).



Fisheries and Aquaculture

Fish is one of the most culturally accepted and nutritionally important protein sources in Sri Lanka. It provides high-quality protein, omega-3 fatty acids, vitamin D, iodine, and zinc (Thilsted et al., 2016). Small indigenous fish species are particularly nutrient-dense, often consumed whole, thereby providing calcium and micronutrients. Inland aquaculture and small-scale fisheries can significantly enhance dietary diversity, particularly in rural communities. Evidence from global studies indicates that increased fish consumption reduces micronutrient deficiencies and improves cognitive outcomes in children (Thilsted et al., 2016).



Poultry and Eggs

Eggs are affordable, nutrient-dense, and widely acceptable across communities. They contain complete protein, choline, vitamin A, vitamin D, and essential fatty acids.

A randomized trial demonstrated that egg consumption significantly improved growth outcomes among young children (Iannotti et al., 2017). Backyard poultry production in rural Sri Lanka has the potential to enhance both household income and direct protein access.

Promoting egg inclusion in school meal programs could be a cost-effective strategy to address protein gaps among children.

Legumes and Traditional Plant Proteins

Sri Lankan diets traditionally include lentils (dhal), cowpea, chickpeas, and green gram. Legumes are important plant-based protein sources and also provide fiber and micronutrients.

While plant proteins may have slightly lower digestibility compared to animal proteins, combining cereals with legumes improves amino acid balance and overall protein quality (FAO, 2013). Revitalizing traditional dietary practices can support sustainable and culturally appropriate nutrition strategies.



Nutrition-Sensitive Agriculture as a Strategic Approach

Nutrition-sensitive agriculture integrates food production goals with nutritional outcomes (Ruel et al., 2018). Diversified farming systems that include crops, livestock, and aquaculture have been shown to improve dietary diversity and micronutrient intake.

Potential strategies in Sri Lanka include:

- Integrated crop–livestock systems
- Home gardens with small livestock
- Community-based aquaculture
- Strengthened dairy value chains

Such systems enhance resilience against economic shocks and climate variability while improving access to diverse protein sources.

Economic Crisis and Its Impact on Dietary Protein Intake

The 2022 economic crisis in Sri Lanka resulted in currency depreciation, inflation, and supply chain disruptions (World Bank, 2023). Food price inflation disproportionately affected animal-source foods.

The World Food Programme (2023) reported that many households adopted coping strategies such as reducing meal frequency and limiting protein-rich foods. These behavioral shifts can have long-term consequences on child growth and maternal health.

Strengthening domestic protein production can reduce dependency on imports and enhance national food sovereignty.

Addressing Hidden Hunger Through Protein Diversification

Hidden hunger refers to micronutrient deficiencies that impair health without overt signs (FAO, 2023). Protein-rich foods play a critical role in addressing:

- Iron deficiency anemia
- Vitamin B12 deficiency
- Zinc deficiency
- Calcium insufficiency

Animal-source foods provide highly bioavailable forms of these nutrients (Dror & Allen, 2011). Even small improvements in access to nutrient-dense protein sources can substantially reduce micronutrient gaps.

Policy Implications and Future Directions

Improving protein and nutrition security in Sri Lanka requires multisectoral collaboration:

1. Investment in smallholder dairy and fisheries
2. Expansion of school feeding programs, including eggs and milk
3. Promotion of backyard poultry and aquaculture
4. Nutrition education campaigns
5. Strengthening value chains to reduce post-harvest losses

Policy frameworks must align agricultural productivity with nutrition objectives to ensure sustainable outcomes.

Summary

Protein and nutrition security are central to Sri Lanka's public health and economic resilience. While caloric adequacy may not be the primary concern at the national level, dietary quality, particularly protein diversity and micronutrient adequacy, requires urgent attention.

Local protein sources, including dairy, fisheries, poultry, legumes, and aquaculture, offer sustainable pathways to improve dietary quality. Strengthening these systems through nutrition-sensitive agricultural policies, research-driven innovations, and community engagement can significantly enhance national well-being.

Sri Lanka's pathway toward improved nutrition lies in bridging agriculture, public health, and policy. Ensuring access to affordable, high-quality protein is not merely a dietary goal it is an investment in the nation's future human capital.

References:

- Dror, D. K., & Allen, L. H. (2011). The importance of animal-source foods for child nutrition. *Journal of Nutrition*, 141(9), 1835–1840.
- FAO. (2013). Dietary protein quality evaluation in human nutrition. FAO Food and Nutrition Paper 92.
- FAO. (2023). The State of Food Security and Nutrition in the World 2023.
- Herforth, A., Bai, Y., Venkat, A., et al. (2020). Cost and affordability of healthy diets. *Lancet Global Health*, 8(1), e59–e66.
- Haug, A., Høstmark, A. T., & Harstad, O. M. (2007). Bovine milk in human nutrition. *Lipids in Health and Disease*, 6(1), 25.
- Iannotti, L. L., et al. (2017). Eggs in early complementary feeding and child growth. *Pediatrics*, 140(1), e20163459.
- Jayawardena, R., et al. (2012). Dietary patterns in Sri Lanka. *BMC Public Health*, 12, 897.
- Ministry of Health Sri Lanka. (2022). National Nutrition Survey Report.
- Thilsted, S. H., et al. (2016). Fish and food security. *Global Food Security*, 8, 16–23.
- WHO. (2007). Protein and amino acid requirements in human nutrition.
- World Bank. (2023). Sri Lanka Development Update.
- WFP. (2023). Sri Lanka Food Security Assessment.

Can Nuts Help You Eat Less?

*Appetite regulating effects of nuts in overweight and obese adults-
Randomized controlled cross over acute feeding trial*



Ms. S. T. Nimasha Rashini
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka



Mrs. Dilki S. Perera
Reg, Dietitian/Nutritionist (SLMC 30/48)
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka



Prof. Kumari M. Rathnayake
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka

Previous research supports this approach: studies have demonstrated that replacing carbohydrates with avocado at breakfast increased satiety hormones such as peptide YY and glucagon-like peptide-1 in overweight adults (Zhu et al., 2019), while almonds have been shown to improve appetite-regulating hormone responses compared to carbohydrate-based snacks (Carter et al., 2022). Additionally, research on Korean pine nut oil has demonstrated effects on cholecystokinin release, a key hormone involved in satiety signaling (Pasman et al., 2008). However, despite the well-documented satiety effects of nuts such as almonds, Korean pine nuts, and walnuts in international research, very few studies have specifically examined peanuts and cashew nuts that are widely available, affordable, and culturally familiar in Sri Lanka.



Overweight and obesity have become a major health crisis worldwide, with nearly one-third of Sri Lankan adults now classified as overweight or obese (Ministry of Health & Census, 2021). For individuals following calorie-restricted weight management plans, the single greatest challenge to adherence is often the persistent hunger and food cravings that occur between main meals (Godwin et al., 2019). This is where appetite regulation becomes critically important, the ability to feel full and satisfied between meals can determine whether a person successfully sticks to their dietary plan or abandons it due to unbearable hunger. Nuts, defined as nutrient-dense dry fruits with a single seed enclosed in a hardened ovary wall, are remarkably rich in monounsaturated and polyunsaturated fatty acids, protein, and dietary fiber components known to enhance satiety through multiple physiological mechanisms (Gonçalves et al., 2023; Ros, 2010).

This research gap is particularly significant, given that both peanuts and cashews possess nutrient profiles rich in protein, fiber, and unsaturated fatty acids that should theoretically promote satiety, yet scientific evidencespecific to these locally accessible nuts remains scarce. Furthermore, a common misconception that nuts contribute to weight gain often discourages individuals from incorporating them into weight management plans, highlighting the need for local studies that can provide evidence-based guidance for populations. This randomized, three-arm, crossover acute feeding trial aimed to assess and compare the appetite- regulating effectsof locally available peanut and cashew shakes in overweight and obese adults, and to determine whether these nut-based shakescould influence subsequent post meal energyintake level at a meal and to assess sensory attributes of shakes.

Study Design

A randomized, three-arm, crossover acute feeding trial was conducted with 14 overweight or obese adults (mean BMI: $25.59 \pm 1.56 \text{ kg/m}^2$; mean age: 25.21 ± 0.98 years). Participants attended three study visits, each separated by a one-week washout period. During each visit, they consumed one of three isocaloric shakes (~220 kcal): a peanut shake, a cashew shake, or a carbohydrate-rich control shake. Appetite sensations were tracked over three hours using 100 mm Visual Analogue Scales (VAS), measuring hunger,fullness, desire to eat, prospective consumption, and satiety.Post-meal energy intake was assessed via a standardized lunch provided three hours after the test shake.



Peanut Shake



Cashew Shake

Key findings

- Both peanut and cashew shakes significantly suppressed appetite across all five VAS measures compared to the control shake ($p < 0.05$)
- Only the peanutshake led to a significant reduction in post-meal energy intake at the subsequent lunch ($p < 0.05$) giving it an added advantage over the cashew shake
- Sensory evaluation showed strongest consumer preference for the peanut shake (Friedman rank: 63.9; $p < 0.05$), suggesting good acceptability for real-world use

Why Does This Matter?

These findings highlight the practical potential of nut-based shakes as a simple, accessible dietary strategy for weight management. By helping to control hungerbetween main meals,peanut and cashew shakes could improve long-term adherence to calorie-controlled diets. The peanut shake, in particular demonstrated a dual benefit: suppressing appetite and reducing post meal energy intake, while also being the most preferred option among participants. This shows locally available, affordable, culturally acceptable peanuts as a highly promising snack for individuals managing overweight or obesity.

References:

- Ministry of Health and Department of Census and Statistics (2021). Non Communicable Diseases Risk Factor Survey (STEPS Survey) Sri Lanka, Sumathi Printers (Pvt) Ltd, Colombo 14, ISBN 978-624-5719-78-5.
- Godwin, N., Roberts, T., Hooshmand, S., Kern, M., & Hong, M. Y. (2019). Mixed Nuts May Promote Satiety While Maintaining Stable Blood Glucose and Insulin in Healthy, Obese, and Overweight Adults in a Two-Arm Randomized Controlled Trial. *Journal of Medicinal Food*, 22(4), 427–432. <https://doi.org/10.1089/jmf.2018.0127>
- Carter, S., Hill, A. M., Buckley, J. D., Tan, S.-Y., Rogers, G. B., & Coates, A. M. (2022). Acute feeding with almonds compared to a carbohydrate-based snack improves appetite-regulating hormones with no effect on self-reported appetite sensations: A randomised controlled trial. *European Journal of Nutrition*. <https://doi.org/10.1007/s00394-022-03027-2>
- Pasman, W. J., Heimerikx, J., Rubingh, C. M., Van Den Berg, R., O'Shea, M., Gambelli, L., Hendriks, H. F., Einerhand, A. W., Scott, C., Keizer, H. G., & Mennen, L. I. (2008). The effect of Korean pine nut oil on in vitro CCK release, on appetite sensations and on gut hormones in post-menopausal overweight women. *Lipids in Health and Disease*, 7(1), 10. <https://doi.org/10.1186/1476-511X-7-10>





Guiding Schools Toward Healthier Food Environments

Highlights from a School-Based Nutrition Intervention

“Healthy Schools, Healthy Futures”



NutriGreen School Project

NutriGreen School Project is an initiative launched under the School Gardening and Food Literacy Project, implemented by the Department of Nutrition and Dietetics at Wayamba University of Sri Lanka. The project aimed to improve students’ food literacy by improving the school food environment.

Key components of the intervention

- **Nutrition Sensitive School Gardens**

Using gardens as a hands-on learning tool to connect students with healthy foods.

- **Healthy School Canteens**

Promoting healthy and safe food in school canteens.

- **Nutrition Education**

Deliver food literacy concepts to the school community, equipping them with the knowledge and skills necessary to make informed dietary decisions.

Background

Malnutrition and unhealthy food habits among children have been increasing rapidly in recent years. Factors such as increased consumption of fast food, reduced intake of fruits and vegetables, and unhealthy school food environments have contributed to this growing problem. In addition, limited knowledge of healthy food choices among students, minimal focus on nutrition in the school curriculum and inadequate nutrition knowledge among teachers make it harder to promote healthy eating.

This situation highlights the urgent need to improve children’s food literacy and the school food environment. Schools provide an ideal setting to promote healthy eating habits and better food choices from an early age.

To address this, a school-based intervention was implemented across five schools. The following are the key activities delivered during the intervention period:

This situation highlights the urgent need to improve children’s food literacy and the school food environment. Schools provide an ideal setting to promote healthy eating habits and better food choices from an early age.

Establishing Nutrition sensitive school gardens

The school gardening component of this intervention aimed to enhance food literacy among students by establishing a model school garden. The garden will serve as a practical platform to integrate nutrition education with hands-on agricultural activities, fostering a deeper understanding of the value of fresh, healthy foods.



School garden as a learning tool



Students engaged in watering the school garden



Students participating in agricultural training sessions



Students engaged in beekeeping activities



Students preparing nutritious meals using fresh produce harvested from the school garden

Promoting healthy school canteens

The healthy school canteen component is focus on equipping the school community with the knowledge and skills necessary to provide healthier meal options while promoting food safety and hygiene practices.

Conducting nutrition promotion activities

This component is designed to deliver food literacy concepts to the school community, equipping them with the knowledge and skills necessary to make informed dietary decisions.



Student-centered activities



Teacher training programs



Provision of learning resources

By integrating these practices into everyday school life, schools can play a pivotal role in shaping lifelong healthy behaviors and promoting nutrition-sensitive education for future generations.



Training programs for school canteen committee members



Healthy food preparation sessions



Introducing healthy food options



Visual displays in canteens

Research Team



Prof. Renuka Silva
Professor in Nutrition
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka



Prof. Janaki Mohotti
Professor in Crop Science
Faculty of Agriculture
University of Peradeniya



Dr. Thushanthi Perera
Senior Lecturer
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka



Prof. Thushara Kudagammana
Professor in Paediatrics
Faculty of Medicine
University of Peradeniya



Dr. Uvasara Dissanayake
Senior Lecturer
Faculty of Agriculture
University of Peradeniya



Dr. Danny Hunter
Principal Scientist
Alliance of Bioversity International and
CIAT, Rome, Italy



Ms. Madusha Karunanayake
PhD Candidate
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka



Ms. Shiromika Indramali
PhD Candidate
Department of Nutrition and Dietetics
Wayamba University of Sri Lanka

Supported by a grant from the Nestle Foundation for the study of problems in the world, Lausanne, Switzerland



The Journal of Nutrition and Food Sciences

Call for Manuscripts



The Journal of Nutrition and Food Sciences -
5th Volume (2026)

Submission

- Journal accepts submissions throughout the year.
- Submit manuscripts through the Sri Lanka Journals Online platform.

✓ All manuscripts will be peer-reviewed before publishing in order to assure the quality of the journal

✓ Types of Manuscripts:

The journal accepts the manuscripts belonging to the following categories

- Full length original research articles
- Review articles/systematic reviews and meta-analysis
- Short communications
- Case reports/ case series

✓ Frequency of Publication:

- Biannual (two issues per year)
- 1st issue - June
- 2nd issue - December

Scope

The journal manuscripts in all areas of nutrition including but not limited to the following areas;

- Clinical nutrition
- Community nutrition
- Functional foods
- Food and nutrition security
- Nutrigenomics
- Food chemistry
- Dietetics
- Nutritional biochemistry and metabolism
- Food processing
- Food microbiology
- Food quality & safety
- Sports nutrition

The journal is published online in the Sri Lanka Journals Online (SLJO) database

Please visit the journal site for author information

<https://jnfs.sljol.info/>

+94 77 790 9663

nssljournal@gmail.com



Join The Nutrition Society of Sri Lanka Today!

Promoting Nutrition, Empowering Health and Inspiring Change

Are you passionate about nutrition, health, and community well-being? Become a part of the **Nutrition Society of Sri Lanka (NSSL)** – the nation's leading professional body for nutrition science and practice.

✔ Benefits of Membership:

- Connect with top nutritionists, dietitians, and health professionals
- Access exclusive research, resources, and scientific publications
- Participate in workshops, webinars, and national conferences
- Stay Updated with the latest trends in nutrition and public health
- Enhance your career with professional development opportunities

The highlight of your membership – Annual Scientific Sessions of the Nutrition Society of Sri Lanka

Members will receive concessionary rates of registration for the Annual Scientific Sessions.

👤 Who Can Join?

- Nutritionists & Dietitians
- Medical & Health Professionals
- Students & Researchers
- Policy Makers & NGOs involved in nutrition and health

📣 Become a Member Today!

Contribute to a healthier Sri Lanka through science and service.

- Life Member - RS. 5000
- Annual member - RS. 2000
- Student member - RS. 1000

📍 Visit: <https://nutritionsof Sri Lanka.org/> to apply
 ✉ Email: sl.nutritionsof Sri Lanka@gmail.com
 📞 Call/ WhatsApp: +94776696050 / +94 773314277

Nutrition Society of Sri Lanka was established in 1972 and incorporated by the Parliamentary Act No 5 (1985) of the Democratic Socialist Republic of Sri Lanka.

Highlights from the Annual Scientific Sessions 2026





Council of the Nutrition Society of Sri Lanka 2026

President

Prof. Kumari M. Rathnayake

Vice President

Dr. S.K.N. De. S. Jeewakarathne

Joint Secretaries

Dr. S. Weerasinghe

Ms. Udara Dassanayake

Treasurer

Dr. Thilanka Ranathunga

Editor

Dr. Thushanthi Perera

Council Members

Prof. Ananda Chandrasekara (Immediate Past President)

Prof. Kanchana Abeysekera

Ms. Ramya Janarth

Ms. Thasmeeha Marliya

Ms. Kanchana Abeysinghe

Prof. Usha Hettiaratchi

Dr. Harshi Gunawardena

Ms. Shehani Ariyaratne

Ms. Shiwanthi Dharmapala



The views and/or opinions included in this newsletter are solely those of the respective author/s and do not necessarily reflect the views and/or opinions of the NSSL.

Some of the images included are AI generated and/or are from the open sources.

Editorial Support/ Graphic Designing for NSSL Nutri-Bulletin Issue I

Ms. Shiwanthi Dharmapala



Ms. Shiwanthi Dharmapala is currently working as a Graduate Teaching Assistant in the Department of Nutrition and Dietetics, Wayamba University of Sri Lanka. She holds a Bachelor's Honours Degree in Food Science and Nutrition specialized in Applied Nutrition, a Master of Food and Nutrition and SLMC Nutritionist registration. Her Academic and professional interests are centered around research in clinical nutrition, with a focus on metabolic syndrome, insulin resistance, and obesity management. She is engaging in community-based nutrition interventions aimed at improving population health and nutritional well-being. In addition, currently she serves as a council member of the Nutrition Society of Sri Lanka.

Contact us



+94 77 669 6050/ +94 77 331 4277



sl.nutritionsociety@gmail.com



**Department of Nutrition and Dietetics
Faculty of Livestock, Fisheries and Nutrition
Wayamba University of Sri Lanka
Makandura, Gonawila (60170)**

**For more information and updates
please visit Nutrition Society of
Sri Lanka Website**

