

NUTRIENT PROFILE MODEL FOR SRI LANKA

To Implement Recommendations on the Marketing of
Food and Non-Alcoholic Beverages to Children

Nutrition Division
Ministry of Health, Nutrition and Indigenous Medicine
in Collaboration with World Health Organization

2018



Ministry of Health, Nutrition
and Indigenous Medicine



Nutrient Profile Model for Sri Lanka to Implement Recommendations on the Marketing of Food and Non-Alcoholic Beverages to Children

This work has been adapted from the WHO Nutrient Profile Model for South-East Asia Region to implement the set of recommendations on the marketing of foods and non-alcoholic beverages to children.

ISBN – 978-955-3666-30-7

Ministry of Health Nutrition and Indigenous Medicine, Sri Lanka; 2018

Some rights reserved. You may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below.

Third-party materials; if you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the Ministry of Health, Sri Lanka"

Suggested citation; Nutrient Profile Model for Sri Lanka to regulate marketing of Food and Non Alcoholic Beverages to children. Ministry of Health Nutrition and Indigenous Medicine, Sri Lanka; 2018

Coordination and Compilation

Dr. Bhanuja S. Wijayatilaka
Consultant Community Physician
Nutrition Divison
Ministry of Health, Nutrition and Indigenous Medicine
Sri Lanka.

FOREWARD

Childhood obesity is a serious public health problem. In Sri Lanka, evidence indicates that the problem is emerging at an alarming rate and undue exposure to food with high fat, salt or sugar has been identified as one of the key determinants. Evidence shows that food marketing extensively targets children and largely promotes food high in fat, salt or sugar and influences children's food preferences and consumption pattern at young ages.

Even though deaths from Non Communicable Diseases primarily occur in adulthood, the risks associated with unhealthy diets begin in childhood and build up throughout life. Children are not mature enough to make informed decisions regarding the persuasive intent of food marketing. Given the particular vulnerability of children to advertising and its potentially harmful impact, it may be regarded as a form of exploitation. Therefore, establishing a system to regulate the marketing of food and beverages to children is essential to shape their food habits and to prevent them from Non Communicable Diseases.

Hence, I appreciate the effort taken by the Nutrition Division of the Ministry of Health and World Health Organization in developing the Nutrient Profile Model which guides to regulate marketing of Food and Non-alcoholic Beverages to children. I encourage all citizens in Sri Lanka especially food manufacturers to follow the model to reformulate food products in favor of reducing the obesogenic food environment and provide your contribution towards a healthy nation.

Dr. Anil Jasinghe
Director General of Health Services

Message from Deputy Director General of Health Services

Unhealthy diet is one of the major risk factors for Non-Communicable Diseases and has been identified as a major contributory factor for childhood obesity. A key driver leading to metabolic and physiological changes related to NCDs is the consumption of foods high in fat, salt and sugar including trans-fats. It is identified that carbonated soft drinks, baked goods, and oils and fats are the most significant sources for those ingredients and consumption of them has rapidly increased in the lower-middle and upper-middle-income countries.

Many studies have shown that children who consume sugar-sweetened beverages regularly, have a high energy intake and are therefore more likely to develop overweight and diet-related Non-Communicable Diseases. In addition, emerging evidence from recent epidemiological and biochemical studies clearly suggests that the high dietary intake of fructose has rapidly become an important causative factor in the development of the metabolic syndrome.

In this scenario, developing a scientific tool to identify food and beverages that are more likely to be constituents of a healthy diet was a real need and development of the Sri Lankan Nutrient Profiling Model has fulfilled the requirement. Hence, I congratulate the Nutrition Division of the Ministry of Health for taking the lead in this endeavor and appreciate the WHO for the funding and technical support provided to complete the mission. I wish that the collective effort of all stakeholders will successfully address the control of NCDs in future.

Dr. Lakshman Gamlath

Deputy Director General
(Environment and Occupational Health)

Message from the Director, Nutrition Division

Childhood nutrition has significant socio-economic implications which carry over into adulthood. Malnutrition, in all its forms, especially amongst children and young people is a major public health concern in Sri Lanka. Despite rapid progress of health status, childhood malnutrition rates are still stagnant at high levels and childhood obesity has doubled during the past ten years.

Majority of risk factors for child malnutrition are preventable and diet plays a major role among those risk factors. Consumption of foods high in fat, salt and sugar since childhood builds up habits and a food culture that forms the foundation for childhood obesity and future metabolic syndrome. Hence, development of a scientific tool to regulate undue exposure of children to food with high fat, salt and sugar was a vital necessity.

I am pleased to inform that Nutrition Division initiated this important endeavor under the technical guidance of WHO and developed the country specific nutrient profile model based on WHO-SEARO model.

I greatly appreciate the technical expert committee of the nutrition division and all other stakeholders, especially resource personnel and food industries who supported to adapt the regional model to Sri Lanka.

Dr. Rasanjalee Hettiarachchi

Director – Nutrition Division

Acknowledgement

Nutrient Profile Model for Sri Lanka to implement recommendations on the marketing of Food and Non-Alcoholic Beverages to Children has been developed by the Nutrition Division, Ministry of Health, Nutrition and Indigenous Medicine, under the technical guidance of the World Health Organization (WHO), based on the WHO Nutrient Profile Model for South-East Asia Region. Ministry of Health, Sri Lanka greatly appreciates WHO Regional Office for South East Asia and WHO Country office for Sri Lanka for providing technical guidance and financial support to develop this model.

Guidance and inputs received from the expert committee and contributors for consensus building including administrators, specialists, academics and professionals from the Ministry of Health, Ministry of Education, Sri Lanka Standard Institute, Legal Draft Department are greatly appreciated. Valuable concerns and suggestions raised by the Ceylon Chamber of Commerce, Food Processor Association and Food Industries were much appreciated without which this document wouldn't be a practical guide.

Special gratitude to Dr. Lakshman Gamlath, Deputy Director General (Environmental, Occupational Health & Food Safety, Ministry of Health), Dr. Renuka Jayatissa, Consultant Medical Nutritionist, Head / Nutrition Unit, Medical Research Institute, Ministry of Health, Prof. Pujitha Wickramasinghe, Professor in Paediatrics, Faculty of Medicine, University of Colombo, Prof. Pulani Lanerolle, Professor in Nutrition, Faculty of Medicine, University of Colombo, Prof. Visith Chavasit, Institute of Nutrition, Mahidol University - Thailand, Dr. Nilmini Hemachandra, National Professional Officer (WHO – Country Office, Sri Lanka) and Dr. Angela de Silva, Regional Adviser Nutrition and Health for Development, regional advisor (WHO-SEARO) and for their invaluable technical guidance.

Technical Expert Committee

- Dr. L.T. Gamlath
Deputy Director General (DDG),
Environmental, Occupational Health
& Food Safety, and acting DDG –
Public Health Service – II, Ministry of
Health
- Dr. R.R.M.L.R. Siyambalagoda
Former Deputy Director General,
Public Health Service – II, Ministry of
Health
- Dr. Rasanjalee Hettiarachchi
Director, Nutrition Coordination
Division, Consultant Community
Physician Ministry of Health
- Dr. Thilak Siriwardana
Director, Non-Communicable
Disease Unit, Ministry of Health
- Dr. Sapumal Dhanapala,
Acting Director, Environmental,
Occupational Health & Food Safety
Unit, Consultant Community
Physician Ministry of Health.
- Dr. Renuka Jayatissa
Consultant Medical Nutritionist,
Head / Nutrition Unit, Medical
Research Institute, Ministry of Health
- Dr. Ayesha Lokubalasooriya
Consultant Community Physician,
Family Health Bureau, Ministry of
Health
- Dr. Anoma Basnayaka
Consultant Community Physician,
Nutrition Division, Ministry of Health
- Dr. Vergini Mallawaarachchi,
Consultant Community Physician
Non-Communicable Disease Unit,
Ministry of Health
- Dr. Amanthi Bandusena
Consultant Community Physician,
Urban & Estate Health, Ministry of
Health
- Dr. Bhanuja S. Wijayatilaka
Consultant Community Physician
Nutrition Division, Ministry of
Health
- Dr. Chandanee Withana
Medical Officer, Nutrition Division,
Ministry of Health
- Ms. Chalani Ilangamage,
Planning & Programming
Assistant and Registered
Nutritionist, Nutrition Division,
Ministry of Health
- Ms. Suntharavathany,
Development Officer and
Registered Nutritionist, Nutrition
Division, Ministry of Health
- Ms. Shanmila Semasinghe,
Development Officer and
Registered Nutritionist, Nutrition
Division, Ministry of Health
- Ms. Sajeewani Mirihagalla,
Development Officer and
Registered Nutritionist, Nutrition
Division, Ministry of Health
- Prof. Pujitha Wickramasinghe
Professor in Paediatrics, Faculty of
Medicine, University of Colombo
& Hon. Consultant paediatrician,
Lady Ridgeway Hospital, Colombo
- Prof. Pulani Lanerolle
Professor in Nutrition, Faculty of
Medicine, University of Colombo
- MS. Renuka Peris
Director, School Health Unit,
Ministry of Education
- Dr. Nilmini Hemachandra -
National Professional Officer,
WHO - Country office -Sri Lanka
- Dr. Angela de Silva - Regional
Adviser Nutrition and Health for
Development, WHO Regional
Office for South East Asia

Abbreviations

NP	-	Nutrient Profile
FNABs	-	Food and Non-alcoholic Beverages
FSS	-	Fat, Sugar, Salt
WHO	-	World Health Organization
WHO – SEARO	-	World Health Organization South East Asia Regional Office
WHO – EURO	-	World Health Organization European Office
WHO – WPRO	-	World Health Organization Western Pacific Regional Office
NSS	-	Non-Sugar Sweeteners
MoH	-	Ministry of Health
NCD	-	Non Communicable Diseases
NHD	-	Nutrition for Health and Development
PAHO	-	Pan American Health Organization

Contents

1. Introduction	01
1.1 Diet and Non Communicable Diseases	02
1.2 Need of Regulating Food and Beverages to Children	04
2. Model development	06
2.1 Nutrient profile models	06
2.2 Model development process	06
3. Nutrient Profile Model	08
3.1 Objectives and Main Uses	08
3.2 Other Uses of the Model	08
3.3 How to use the Model	09
3.3.1 General Exclusions	09
3.3.2 Testing for acceptability	09
3.4 Food categories and thresholds	10
3.5 Important Information for Users of the Model	12
3.6 Principles and Rationale of the Model	13
Glossary	14
References	16
Annexes	19
Contributors for Consensus Building	33

List of Figures

Figure 01- Trends in Prevalence of Overweight in Grade 10 Children	02
--	----

List of Tables

Table 01 - WHO Population Nutrient Intake Goals	03
Table 02 - Sri Lankan Nutrient Profile Model	11

List of Annexures

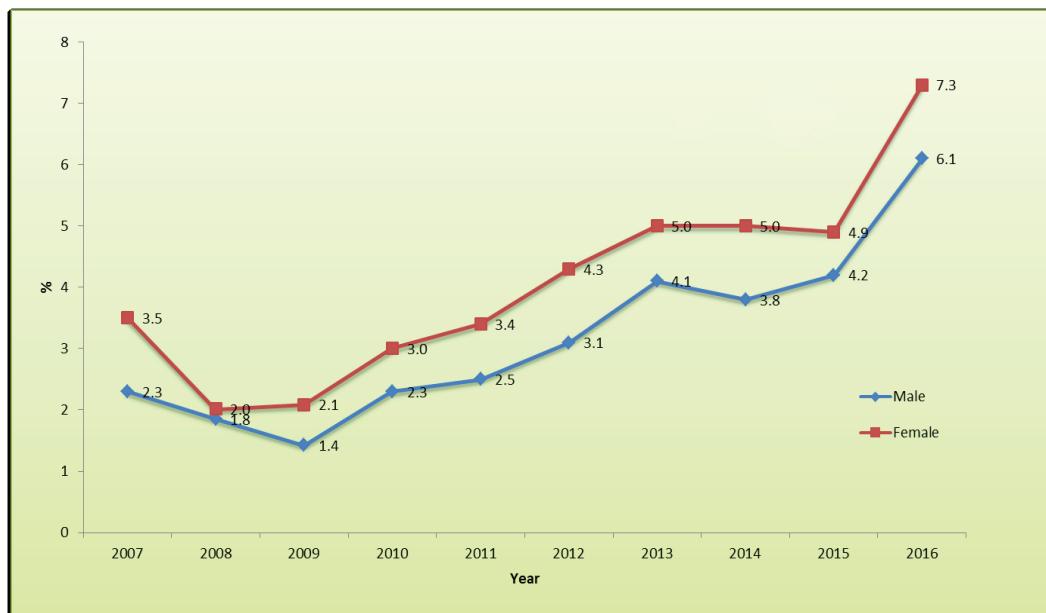
Annexure 1 Selected Common Examples of Foods described as Energy Rich or Nutrient Poor	19
Annexure 2 Set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children	20
Annexure 3 The Norms and Calculations used in the Model	22
Annexure 4 Justifications / Explanations for Thresholds	23

1. Introduction

Childhood obesity is one of the most serious public health challenges of the 21st century. Globally, in 2016 the number of overweight children under the age of five was estimated to be over 41 million and almost half of them are from Asia¹. It further emphasizes that the prevalence has increased at an alarming rate affecting many low-and-middle-income countries, particularly in urban settings. Sri Lanka is not an exception, with rising prevalence of overweight and obesity as well as other risk factors for the development of Non-Communicable Disease (NCD), it requires urgent attention. Overweight during childhood and adolescence is associated not only with an increased risk of adult obesity and NCDs but also with a number of immediate health-related problems, such as hypertension and insulin resistance beginning from a young age ².

In Sri Lanka, NCDs cause more than three-quarters of all deaths and nearly 1 in 5 people die prematurely from NCDs³. In the meantime, mortality from cardiovascular diseases continues to remain as the number one in hospital deaths according to the Annual Health Bulletins⁴. Even though the prevalence of overweight and obesity is still low (0.5%) in children under 5 years of age, the prevalence has increased during the school age, to reach 6 to 7% by grade ten⁵ (Figure 01). This indicates more than doubling the prevalence of overweight/obesity among school children during the last decade. In 2015, only 55.4% of adults (58.9% males and 51.6% females) had a normal BMI value of 18.5-24.9 while nearly one-fourth of the males (24.6%) and one third of the females (34.3%) were found to be either overweight or obese⁶. The same survey shows that 7.4% of adults were estimated to have either raised blood glucose or were on medication for diabetes and nearly one-fourth of the adults (23.7%) were estimated to have either raised total cholesterol (≥ 190 mg/dl) or were on medication for raised cholesterol. As a result, an enormous burden has been added to the health sector with increasing cost for treatment and management of complications. Hence, these national findings warrant interventions on improving availability and affordability of healthy food for the nation for which a method to identify foods that are more likely to be constituents of a healthy diet is a priority.

**Figure 01: Trends in Prevalence of Overweight in Grade 10 Children
2007-2016**



Source – Nutrition month data, Ministry of Health, Nutrition and Indigenous Medicine,

1.1 Diet and Non-Communicable Diseases

A key driver leading to metabolic and physiological changes related to NCDs; overweight/obesity, raised blood pressure, raised blood glucose and raised cholesterol is consumption of food high in fat, salt and sugar (FSS) including trans-fats⁷. It further emphasized that carbonated soft drinks, baked goods, and oils are the most significant vectors for those ingredients and consumption of them has rapidly increased in lower-middle and upper-middle-income countries in comparison to that of high-income countries. In countries that have experienced retail sector growth have also shown the processed packaged foods contribute the bulk of caloric intake⁸. It has shown that consumption of energy-dense, nutrient-poor foods at the expense of nutrient-dense foods resulted in a risk of high energy intake, poor micronutrient intake, low serum concentrations of vitamins and carotenoids⁹. Mann in the Bulletin of the World Health Organization indicates that excess free sugars intake is associated with obesity, which in turn contributes to diabetes and coronary heart disease¹⁰. A meta-analysis published in Diabetes Care concluded people who consume sugary drinks regularly have a 26% greater risk of developing type 2 diabetes than people who rarely have such drinks.¹¹. In addition, many studies^{12 13 14 15} have shown that children who consume sugar-sweetened beverages regularly, have a high energy intake and are therefore more likely to be overweight and development of diet-related NCDs. Emerging evidence from recent epidemiological and biochemical studies clearly suggests that the high

dietary intake of fructose has become an important causative factor in the development of the metabolic syndrome¹⁶.

As undernutrition is still a problem in the country, promoting a balanced diet is one of the strategies to address the double burden of malnutrition, where energy must come from nutrient-rich foods but not from energy-dense or nutrient poor foods¹⁷. Annex 01 provides definitions of energy-dense or nutrient poor foods from the literature and examples. Table 01 indicates WHO Population Nutrient Intake Goals which provides the acceptable levels of consumption of specific nutrients as a percentage of daily energy requirements and can be used as a guide for healthy diets to prevent all forms of malnutrition¹⁸.

Table 01 - WHO Population Nutrient Intake Goals

Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15–30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6–10%
n-6 Polyunsaturated fatty acids (PUFAs)	5–8%
n-3 Polyunsaturated fatty acids (PUFAs)	1–2%
Trans-fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference ^I
Total carbohydrate	55–75%
Free sugars ^{II}	<10%
Protein	10–15%
Cholesterol	<300 mg per day
Sodium chloride (sodium)	<5 g per day (<2 g per day)
Fruits and vegetables	≥400 g per day
Total dietary fibre	From foods
Non-starch polysaccharides (NSP)	From foods ^{III}

^IThis is calculated as total fat - (saturated fatty acids + polyunsaturated fatty acids + trans-fatty acids

^{II}The term “free sugars” refers to all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.

^{III}See section under “Non-starch polysaccharide (www.who.int/mediacentre/factsheets/fs394/en/)

1.2 Need for Regulating Food and Beverages to Children

Children are a vulnerable group because they are not mature enough to make informed decisions regarding the persuasive intent of food marketing. Given the particular vulnerability of children to advertising and its potentially harmful impact, it may be regarded as a form of exploitation. Therefore, establishing a system to regulate the marketing of food and beverages to children is essential to shape their food habits and to prevent NCDs, similarly to protecting children from smoking.

Deaths from NCDs primarily occur in adulthood, nevertheless; the risks associated with unhealthy diets begin in childhood and build up throughout life. Evidence shows that food marketing extensively targets children and largely promotes food high in fat, salt or sugar (FSS) and influences children's food preferences and consumption pattern at young ages¹⁹. A study on associations of content types of children's television viewing with subsequent body mass index, published in the American Journal of Public Health further emphasized a strong link between TV viewing and obesity in children and data suggest that this relationship is probably operates through the effect of advertising obesogenic foods on television²⁰. In the meantime, a recent survey²¹ carried out by the WHO in Sri Lanka identified that broadcasting of food advertisement is mainly happening during both children's and family TV schedules and contains advertisements of obesogenic foods.

In order to prevent the pervasive influence of such marketing, a set of recommendations² on marketing of foods and non-alcoholic beverages to children was endorsed by the Sixty-third World Health Assembly in May 2010 (Annexure 02). It urges member states to take action at national level and to cooperate to put in place the means necessary to reduce the impact of marketing of foods high in saturated fats, trans-fatty acids, free sugars and salt. As a result, Nutrition for Health and Development Unit of the WHO Regional Office for South-East Asia (SEARO) developed a Regional Nutrient Profile Model¹⁷, an objective method of categorizing foods that are more likely to be constituents of a healthy diet from those that are less likely to be constituents of a healthy diet. It has been developed for the South-East Asia region with technical contribution from 11 Member States of the Region including Sri Lanka to regulate the marketing of foods and non-alcoholic beverages (FNAB) to children. It is expected that this model will be adopted by the member states to implement the set of recommendations endorsed by the World Health Assembly.

Currently, Sri Lanka does not have such a tool in practice. Hence, development of a country-specific nutrient profile model to regulate the marketing of Food and Non-Alcoholic Beverages to children was a vital

requirement. This requirement has been emphasized in the national multi-sectoral action plan for the prevention and control of NCD and at many national level fora including Nutrition Steering Committee and National Coordinating Committee on School Health.

2. Model Development

Nutrient Profile (NP) Model is an objective method of categorizing foods that are more likely to be constituents of a healthy diet from those that are less likely to be constituents of a healthy diet. NP Model for Sri Lankan has been developed based on the WHO-SEARO model with the prime purpose of regulating the marketing of foods and non alcoholic beverages by implementing recommendations on the marketing of Food and Non-Alcoholic Beverages to Children.

2.1 Nutrient Profile Models

NP models vary in complexity and based on a categorical or a scoring system. Category-specific models are considered easier to adapt or modify than models based on a scoring system. This is an important fact considered for selecting the WHO-SEARO model for adaptation. WHO European Model (WHO EURO)²², Western Pacific Region Model (WHO WPRO)²³ and Pan American Health Organization Model (PAHO)²⁴ are some other nutrient profile models available in other parts of the world.

2.2 Model Development Process

The development of the model was a policy exercise based on scientific Information. According to the responsibility given by the government of Sri Lanka, the Nutrition Division of the Ministry of Health, Nutrition and Indigenous Medicine, under the technical guidance of the WHO, has taken steps to adjust the WHO-SEARO model to Sri Lanka. The process involved a series of consultative meetings and workshops with content and context specialists and stakeholders from the health and non-health sectors including the Ceylon Chamber of Commerce and other relevant food industries. The model was concluded considering the concerns and suggestions of all stakeholders.

A literature review was carried out to understand the prevailing nutrient profiling models around the globe and concluded that categorical modelling is more appropriate than the scoring system as a start for a country. Hence, the WHO-SEARO model, the regional guide which is based on categorical modelling was considered as a guide for developing the NP model for Sri Lanka. As first step, WHO-SEARO model was adapted with the help of the content and context specialists through series of consultative meetings and a workshop with stakeholders. The draft nutrient profile model was introduced to the wider forum involving representatives of the Ceylon Chamber of

Commerce, Food Processors Association, food industries, Sri Lanka Standard Institute, Legal Draftsmen Department, Ministry of Education, and all relevant sectors of the Ministry of Health. Then the preliminary model was prepared considering the concerns and suggestions of the participants. The preliminary model was finalized with some modifications following another discussion with stakeholders including the Ceylon Chamber of Commerce representing food industries.

In the meantime, a food label analysis was carried out to identify the current situation of the food labelling of the country. A list of food items for analysis was prepared to cover all food categories of the model which is in align with Codex Alimentarius. Special attention was given to include food and beverages that have been identified as commonly identified food items through a mass media survey. Labelling information was collected by a market survey and analysed to check the availability of nutrient information that is required by the nutrient profile model. The draft model was tested with the collected information and it was found that many food items cannot be evaluated due to the absence or incomplete nutrient labelling of food items. However, the majority of the food items with poor nutritional value and high FSS was not accepted by the model which is in align with the objectives of the model.

3

3. Nutrient Profile Model

3.1 Objectives and Main Uses

Nutrient Profile (NP) model is a scientific tool which provides threshold levels with the objective of identifying Food and Non-alcoholic Beverages (FNABs) that are more likely to be constituents of a healthy diet. Nutrient Profile Model for Sri Lankan has been developed based on the WHO-SEARO model with the prime purpose of regulating the marketing of foods and non-alcoholic beverages to children to reduce the exposure and the power of marketing of food high in fat, salt and sugar. This model does not categorize foods and beverages as healthy or unhealthy; nevertheless, it provides policymakers a platform to regulate/control the marketing of foods and beverages to children and empower consumers to make informed food choices.

Regulatory mechanisms will include implementation of restrictions in food advertising to children through media and other means and prohibition of marketing of food and beverages that are identified as "not acceptable" by this model. The model does not prohibit production or selling of any food item to the general public, however, it will educate both adults and children on nutrition literacy and provide food manufacturers a guide on formulating their products by reducing fat, salt and sugar to below threshold limits, thereby making healthier products available.

3.2 Other Uses of the Model

This model could also be adapted for implementing population-based strategies that have been advocated by the WHO to reduce the obesogenic environment and promote healthy diets.¹⁷

- To implement a standardized nutrient labelling system with interpretive front-of-pack labelling.
- To describe/ define the tax base for implementing fiscal policies.

As this model has been prepared focussing on regulating FNABs to children, some modifications are needed if it is used for other purposes as mentioned above.

3.3 How to use the Model

Food and beverages that are included into any of the following general exclusions are NOT accepted for marketing to children. Fresh and Frozen fruits, vegetables and legumes as shown in the category 15 of the model and freshly squeezed natural fruit and vegetable juices without added sugar are accepted without considering the threshold limits as they are encouraged over the other products. Other food items can be tested for acceptability of marketing to children through the NP model as mentioned below.

3.3.1 General Exclusions

- Food products that are not aligned with regulations of the Food Act, especially with regard to food additives, colours and binders.
- Food products that contain more than 1% of total energy in the form of industrially produced trans-fatty acid or 0.5 g of trans-fat per serving.
- Food products that contain more than 0.5% of total energy in the form of alcohol.
- Food products with any amount of non-sugar sweeteners (NSS).

3.3.2 Testing for acceptability

- Select the food product for testing
- Calculate the nutrient composition of the food product as its ready to eat / drink form* based on the information provided in the food label
- Identify the relevant food category in the model for the selected food product.
- Cross-check the nutrient composition of the product as its ready to eat / drink form against the thresholds provided in the relevant category.
- It is important to notice that each nutrient of the product should individually meet the specified thresholds of the relevant category.
- A food product is categorized as 'acceptable', if all nutrients of the product are equal or lower than the corresponding thresholds specified for the relevant category.
- A food product is categorized as 'not acceptable', if any nutrient of the product is higher than the corresponding thresholds specified for the relevant category.

*The nutrient composition of food and beverages can be considered as it is on the label unless it needs reconstitution prior to consumption.

Food products categorized as ‘acceptable’ could be permitted for marketing to children according to the regulations of the Food Act. Any food product categorized as “not acceptable”, will not be permitted for advertising and marketing to children. However, if a product is a traditional item associated with a celebratory event, it may be permitted for marketing for a reasonable period during the event.

3.4 Food Categories and Thresholds

There are 18 main food categories which are in align with Codex Alimentarius ²⁵ included in the Sri Lankan Nutrient Profile model (Table 02). It demonstrates the thresholds specified for selected nutrients and energy according to the categories of the model.

The nutrients for which the thresholds have been set are total fat, saturated fat, total sugar, added sugar and sodium. In addition, a threshold for energy has been specified for some food categories which include snacks. They are based on the WHO Population Nutrient Intake Goals, energy recommendations ²⁶, sugar and salt guidelines ^{27 28} and consensus arrived following a series of consultative meetings held with local experts and relevant stakeholders including food industries. The norms and calculations used in the model have been explained in the Annexure 03.

Table 02 - Sri Lankan Nutrient Profile Model

Food Category		Threshold per 100g or 100ml					
		Total fat (g)	Sat Fat (g)	Total Sugar(g)	Added Sugar(g)	Sodium (g)	Energy (kcal)
1	Confectionary	8.0	NTP	6.0	NTP	NTP	230
2	Fine bakery wares	8.0	NTP	6.0	NTP	0.25	230
3	Bread and ordinary bakery wares	8.0	NTP	6.0	NTP	0.25	NTP
4	Cereals	12.0	NTP	9.0	NTP	0.35	NTP
5a	Potato, cereal or starch-based	8.0	NTP	NTP	0.0	0.25	230
5b	Processed nuts	NTP	NTP	NTP	2.0	0.05	NTP
6a	Juices	NTP	NTP	6.0 *	0.0	NTP	NTP
6b	Milk and dairy-based drinks	4.0	NTP	NTP	2.0	NTP	NTP
6c	Water-based Flavored drink	NTP	NTP	2.0	NTP	0.3	NTP
6d	Coffee, Coffee substitute, tea, herbal infusion	NTP	NTP	2.0	NTP	NTP	NTP
6e	Cereal, grain and tree nut-based beverage	NTP	NTP	6.0	NTP	0.2	NTP
7	Frozen dairy-based desserts and edible ices	10.0	NTP	12.0	NTP	0.10	230
8a	Curded dairy-based desserts	7.0	NTP	NTP	0	0.10	230
8b	Yogurts	4.0	NTP	12.0	NTP	0.10	100
9	Cheese and analogues	20.0	NTP	NTP	0.0	0.6	NTP
10	Composite Foods (Prepared foods)	8.0	3.5	9.0	NTP	0.4	NTP
11	Fats and oils, and fat emulsions	NTP	35.0	NTP	NTP	0.10	NTP
12	Pasta and noodles and like products	3.0	NTP	NTP	NTP	0.25	NTP
13	Fresh and frozen meat, poultry, game, fish and seafood products	Beef -25 Lamb -25 Pork - 20 Others-15	NTP	NTP	NTP	NTP	NTP
14a	Processed meat, poultry and game products	8.0	3.0	NTP	NTP	0.4	NTP
14b	Processed fish and Seafood Products	8.0	3.0	NTP	NTP	0.4	NTP
15	Fresh and Frozen fruits and vegetables	PERMITTED					
16	Processed fruits and vegetables	NTP	NTP	NTP	2.0	0.40	NTP
17	Solid-form soybean products	12.0	NTP	8.0	0.0	0.10	NTP
18a	Sauces, dips, and dressings	12.0	NTP	20.0	NTP	0.35	NTP
18a	Seasoning	12.0	NTP	10.0	NTP	0.35	NTP

* Freshly squeezed natural fruit juices without add suger are exempted.

NTP – No Thresholds Provided

3.5 Important Information for Users of the Model

- Children are considered as persons up to the age of 18 years based on the WHO-SEARO model.
- The threshold levels are given per 100g or 100ml depending on the food item.
- The nutrient composition of food and beverages for comparison with the thresholds should be considered as its ready to eat / drink form.
- The nutrient composition of food and beverages can be considered as it is on the label unless it needs reconstitution prior to consumption.
- The nutrient composition of products that need reconstitution prior to consumption such as dried pasta, noodles (category 12) and soups, instant noodles, instant porridge (category 10) should be calculated on the basis of the nutritional composition of the reconstituted product prepared according to the manufacturer's instructions.
- If the marketing is for a restaurant meal, including a quick-service or takeaway meal of two or more menu items, each item should individually meet the relevant nutrient criteria.
- Thresholds are given for 100g of a single food item and not for whole meals except in the category of composite dishes.
- Foods and beverages for special uses, such as breast milk substitutes and food supplements should be subjected to specific regulations and thus have not been included in this model.
- The nutrient profile model is meant to be applied to foods consumed by healthy population and excludes special food supplements for specific disease conditions.

3.6 Principles and Rationale of the Model

The aim of developing the NP model is to prevent children from undue exposure to fat, salt and sugar (FSS) by regulating advertising and marketing of food and non-alcoholic beverages with high FSS through media, school cafeterias and other means. Developing personal skills by providing information is one of the crucial areas of health promotion and the model empowers consumers on food with high FSS to make informed decisions. Thresholds have been concluded on scientific basis following intensive literature review, consulting context and content experts and respecting concerns and suggestions of the stakeholders including food industries. The thresholds are justified in the Annexure 04.

Fat, salt and sugar levels in each and every individual food item contributes to the total FSS intake of a person because each food item contributes to make a holistic meal. Therefore, the Ministry of Health (MoH) has identified the importance of establishing healthy eating habits, specially preventing children from undue exposure to food high in FSS as a main preventive strategy for curbing the menace of NCD. Children should not only balance their energy intake but also need to adjust their eating behaviour on habitual consumption of sweet flavour. Hence, food products with non-sugar sweeteners (NSS) are not recommended for children according to this model.

The model is designed to measure the nutritional quality of the food regardless of the quantity consumed at its ready to eat /drink composition. The nutrient profile thresholds are always calculated per 100 g or 100ml, irrespective of the amount of product consumed. Using a 'per serving' approach introduces several difficulties, including the fact that serving sizes and consumption patterns are an individual matter and cannot be standardized, especially across different age groups and cultures. On the other hand, having micronutrients in food and beverages with high FSS does not make them suitable for children, as the negative effects of high FSS will outweigh the gains with micronutrients in the food. In the meantime, recent national studies^{29 30 31} carried out by the Ministry of Health revealed that the micronutrient deficiencies of the country are improving and some micronutrients are in excess among some groups. Lack or incomplete nutrient labelling in some food items, especially in street foods, indeed is an identified problem for which the model cannot be applied. However, other mechanisms are in operation to regulate the marketing of such products and the country is adopting a stepwise approach to have them labelled and will include this sector in due course.

Glossary

- **Advertising:** The paid public presentation and promotion of ideas, goods, or services by a sponsor that is intended to bring a product to the attention of consumers through a variety of media channels such as broadcast and cable television, radio, print, billboards, the Internet, or personal contact.
- **Child:** Every human being below the age of 18 years.
- **Energy:** Total chemical energy available in food (in kilocalories or kcal) and its macronutrient constituents (carbohydrates, fats, and proteins).
- **Energy-dense foods:** The amount of energy or calories in a particular weight of food and is generally presented as the number of calories in a gram (kcal/g). Foods with a lower energy density provide fewer calories per gram than foods with a higher energy density. For the same amount of calories, a person can consume a larger portion of a food lower in energy density than a food higher in energy density.
- **Healthy food:** All foods that are not defined as the unhealthy foods (see below).
- **Marketing:** Various practices which constitute a commercial communication or message that is designed to, or has the effect of, increasing the recognition, appeal and/or consumption of particular products and services. It comprises anything that acts to advertise or otherwise promote a product or service. The action or business of promoting and selling products or services, including market research and advertising.
- **Non-sugar sweeteners:** Food additives that impart a sweet taste to a food, including artificial non-caloric sweeteners (e.g. aspartame, sucralose, saccharin, and acesulfame potassium); natural non-caloric sweeteners (e.g stevia); and caloric sweeteners such as polyols (e.g. sorbitol, mannitol, lactitol, and isomalt). This category does not include fruit juices, honey, or other food ingredients that can be used as sweeteners.
- **Processed food:** Food products manufactured by industry in which salt, sugar, fat and/or other culinary ingredients have been added to unprocessed or minimally processed foods to preserve them or make them more palatable. Processed food products are derived directly from natural foods and are recognized as a version of the original foods. The processes used in the manufacture of these food products may include different methods of preparation, cooking, preservation and, in the case of cheeses and bread, nonalcoholic fermentation. Food-grade additives may be used to preserve the sensory properties and safety of these products.

- **Saturated fat:** Fat molecules with no double bonds between carbon molecules. The saturated fatty acids used most often in current food products are C14, C16, and C18. In the case of milk and coconut oil, however, saturated fatty acids range from C4 to C18.
- **Sodium:** A soft, silver-white element found in salt; 1 g of sodium equals about 2.5 g of salt.
- **Free sugars** refer to all monosaccharides (such as glucose or fructose) and disaccharides (such as sucrose or table sugar) added to foods by the manufacturer, cook or consumers in addition to sugars naturally present in honey, syrups, fruit juices and fruit concentrates. In this case, intrinsic sugars in, for example, fruits and vegetables are not considered free sugars.
- **Total sugars** refers to the total sugar content of the food product, which may be composed of intrinsic sugars incorporated within the structure of intact fruit and vegetables; sugars from milk (lactose and galactose); and all additional monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.
- **Added sugars** refer to monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer during processing or preparation. For the purpose of this nutrient profile model, the term 'added sugar' is used for consistency with available data in food composition tables.
- **Total fat:** The total fat content of a food product composed of fatty acids from the three main groups (saturated fatty acids, mono-unsaturated fatty acids, and poly-unsaturated fatty acids), which these groups are differentiated based on their chemical formula and structure.
- **Trans-fat:** A form of fat that results from the hydrogenation of unsaturated fatty acids or occurs naturally in the milk and meat of certain animals.
- **Unhealthy food:** Individual or composite foods and beverages that are high in energy, sodium, sugar and/or low in other beneficial nutrients such as protein, vitamins, minerals and non-nutrient compounds such as fibre. These foods and beverages mostly have strong salty and/or sweet taste and rich mouthfeel from fat.

References

1. World Health Organization. Childhood overweight and obesity [Available from: <http://www.who.int/dietphysicalactivity/childhood/en/>]
2. World Health Organization. Set of recommendations on the Marketing of Foods and Non-Alcoholic Beverages to children. WHO Press, World Health Organization, Geneva, Switzerland; 2010.
3. World Health Organization. Sri Lanka Country Profile [Available from: <http://www.who.int/beat-ncds/countries/sri-lanka/en/>]
4. Ministry of Health. Annual Health Bulletin. Medical Statistics Unit, Ministry of Health, Nutrition and Indigenous Medicine; 2012, 2013, 2014, 2015.
5. Ministry of Health. Annual Report on Family Health Bureau 2016. Family Health Bureau, Ministry of Health, Sri Lanka; 2016.
6. Ministry of Health and World Health Organization. Non Communicable Disease Risk factor Survey, Sri Lanka; 2015. 2016.
7. Baker P, Friel S. Processed foods and the nutrition transition: Evidence from Asia. *Obes Rev* [Internet]. 2014; 15(7):[564-77 pp.].
8. Popkin BM. Nutrition, agriculture and the global food system in low and middle income countries. *Food Policy*. 2014;47:91-6.
9. Kant AK. Consumption of energy-dense, nutrient-poor foods by adult Americans: nutritional and health implications. The third National Health and Nutrition Examination Survey, 1988–1994. *Am J ClinNutr*. 2000;72(4):929-36.
10. Mann J. Sugar revisited-again. *The Bulletin of the World Health Organization*. 2003;81(8):552.
11. Malik VS, Popkin BM, Bray GA, Despres JP, Willett WC, Hu FB. Sugar sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. *Diabetes Care*. 2010;33(11):2477-83.
12. Malik VS, Pan A, Willett WC, Hu FB. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *Am J Clin Nutr*. 2013;98(4):1084–102.
13. Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *Am J ClinNutr*. 2006;84(2):274–88.

14. Vartanian LR, Schwartz MB, Brownell KD. Effects of soft drink consumption on nutrition and health: a systematic review and meta-analysis. *Am J Public Health*. 2007;10(4):120.
15. Weeratunga P et al. Per- capita sugar consumption and prevalence of diabetes mellitus – global and regional associations *BMC Public Health*,. 2014;14:186.
16. Basciano H et al. Fructose, insulin resistance, and metabolic dyslipidemia, *Nutr Metab*. 2005;2:5. doi:10.1186/1743-7075-2-5.
17. WHO Nutrient Profile Model for South-East Asia Region. To implement the set of recommendations on the marketing of foods and non-alcoholic beverages to children. New Delhi: World Health Organization, Regional Office for South- East Asia; 2017.
18. World Health Organization. Diet, nutrition and the prevention of chronic diseases: report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series. World Health Organization, Geneva; 2003.
19. World Health Organization. Marketing of foods high in fat, salt and sugar to children: update 2012 – 2013. 2013.
20. Zimmerman FJ, Bell JF. Associations of television content type and obesity in children. *Am J Public Health*. 2010;100(2):334-40.
21. World Health Organization. Misinformation and Exploitation: An Assessment of Advertising and Marketing of HFSS FNAB to Children. Sri Lanka: Verite research commissioned, WHO 2016.
22. World Health Organization. Regional Office for Europe nutrient profiling model. World Health Organization regional office for Europe, Denmark; 2015. [Available from: http://www.euro.who.int/__data/assets/pdf_file/0005/270716/Nutrient-children_web-new.pdf]
23. World Health Organization. Nutrient Profile Model for the Western Pacific Region. 2016. [Available from:<http://iris.wpro.who.int/bitstream/handle/10665.1/13525/9789290617853-eng.pdf?ua=1>
24. World Health Organization. Pan American Health Organization Nutrient Profile Model. 2016. [Available from: http://iris.paho.org/xmlui/bitstream/handle/123456789/18621/9789275118733_eng.pdf?sequence=9&isAllowed=y
25. Codex Alimentarius. International Food Standards FAO, WHO GENERAL STANDARD FOR FOOD ADDITIVES CODEX STAN 192-1995. Adopted in 1995. Révision 1997, 1999, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016

26. Nishida C et al. The Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases: process, product and policy implications. *Public Health Nutr.* 7(1A):245–50.
27. World Health Organization. Guideline: Sodium intake for adults and children. Geneva: WHO 2012. [Available from: http://apps.who.int/iris/bitstream/handle/10665/77985/9789241504836_eng.pdf?sequence=1
28. World Health Organization. Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015. [Available from: http://apps.who.int/iris/bitstream/handle/10665/149782/9789241549028_eng.pdf?sequence=1
29. Ministry of Health. Iodine Deficiency Status in Sri Lanka – 2016. Fourth National Survey. Medical Research Institute, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka in collaboration with UNICEF and World Food Programme; 2017.
30. Ministry of Health. National Nutrition and Micronutrient Survey of Pregnant Women in Sri Lanka –2015. Medical Research Institute, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka in collaboration with UNICEF and World Food Programme; 2017.
31. Ministry of Health. Nutritional Status, Dietary Practices and Pattern of Physical Activity Among School Children Aged 6-12 Years – 2016. Medical Research Institute, Ministry of Health, Nutrition and Indigenous Medicine, Sri Lanka in collaboration with UNICEF and World Food Programme; 2017.
32. Human energy requirements. Report of a Joint FAO/WHO/UNU Expert Consultation. Rome;2001.
33. Savige G, MacFarlane A, Ball K, Worsley A, Crawford D. Snacking behaviours of adolescents and their association with skipping meals. *Int J Behav Nutr and Phys Act* 2007;4(36).
34. Lee SK, Park HK, YJ. C. Nutritional standards for energy-dense low-nutrient density foods for children in Korea. *Asia Pac J Clin Nutr.* 2014;23(1):27-33.
35. World Cancer Research Fund / American Institute for Cancer Research. Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective. Washington DC: AICR, 2007;378-379. [Available from:http://www.aicr.org/assets/docs/pdf/reports/Second_Expert_Report.pdf-]

Annexure 1

Selected Common Examples of Foods described as Energy Rich or Nutrient Poor ¹⁷

Term	What is meant	Reference
Energy-dense, nutrient-poor foods	Foods other than meat, dairy, grain, fruit, or vegetables (eg: fats, sweets, alcohol)	Kant AK, Schatzkin A. Consumption of energy-dense, nutrient-poor foods by the US population: effect on nutrient profiles. <i>J Am Coll Nutr</i> 1994;13:285– 91.
High-calorie, low-nutrient-dense foods	Candy, chips, soda, baked goods, ice cream	Bandini LG, Vu D, Must A, Cyr H, Goldberg A, Dietz WH. Comparison of high-calorie, low-nutrient-dense food consumption among obese and non-obese adolescents. <i>Obes Res</i> 1999;7:438–43.
Low nutrient density foods	Fat, sugar, candy, soft drinks, baked desserts, dairy desserts, salted snacks, coffee, tea	Kant AK. Reported consumption of low-nutrient-density food by American children and adolescents. <i>Arch Pediatr Adolesc Med</i> 2003;157:789–96.
Energy dense foods	Cakes, cookies, pastries; carbonated beverages; sugars, jams, syrups; salty snacks	Phillips S, Starkey LJ, Donald KG. Food habits of Canadians: food sources of nutrients for the adolescent sample. <i>Can J Diet Pract Res</i> 2004;65:81–4.
Energy-dense snack foods	Baked goods, ice cream, chips, sugar-sweetened soda, candy	Phillips SM, Bandini LG, Naumova EN, et al. Energy-dense snack food intake in adolescence: longitudinal relationship to weight and fatness. <i>Obes Res</i> 2004;12:461–72.
Foods of minimum nutritional value	<5% of the US recommended dietary allowance for protein, calcium, iron, vitamin A, vitamin C, riboflavin, thiamine, niacin (per serving) Soda water, water ices, chewing gum, candies	US Department of Agriculture, Food and Nutrition Service. School Meals Foods of Minimal Nutritional Value http://www.fns.usda.gov/schoolmeals/foods-minimal-nutritional-value

Annexure 2

Set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children

(Resolution of the Sixty-third World Health Assembly adopted 21 May 2010:
WHA63.14 Marketing of food and non-alcoholic beverages to children)

RECOMMENDATION 1

The policy aim should be to reduce the impact on children of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt.

RECOMMENDATION 2

Given that the effectiveness of marketing is a function of exposure and power, the overall policy objective should be to reduce both the exposure of children to, and power of, marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt.

RECOMMENDATION 3

To achieve the policy aim and objective, Member States should consider different approaches, i.e. stepwise or comprehensive, to reduce marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt, to children.

RECOMMENDATION 4

Governments should set clear definitions for the key components of the policy, thereby allowing for a standard implementation process. The setting of clear definitions would facilitate uniform implementation, irrespective of the implementing body. When setting the key definitions Member States need to identify and address any specific national challenges so as to derive the maximal impact of the policy.

RECOMMENDATION 5

Settings, where children gather, should be free from all forms of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt. Such settings include, but are not limited to, nurseries, schools, school grounds and pre-school centres, playgrounds, family and child clinics and paediatric services and during any sporting and cultural activities that are held on these premises.

RECOMMENDATION 6

Governments should be the key stakeholders in the development of policy and provide leadership, through a multistakeholder platform, for implementation, monitoring and evaluation. In setting the national policy framework,

governments may choose to allocate defined roles to other stakeholders, while protecting the public interest and avoiding conflict of interest.

RECOMMENDATION 7

Considering resources, benefits and burdens of all stakeholders involved, Member States should consider the most effective approach to reduce marketing to children of foods high in saturated fats, trans-fatty acids, free sugars, or salt. Any approach selected should be set within a framework developed to achieve the policy objective.

RECOMMENDATION 8

Member States should cooperate to put in place the means necessary to reduce the impact of cross-border marketing (in-flowing and out-flowing) of foods high in saturated fats, trans-fatty acids, free sugars, or salt to children in order to achieve the highest possible impact of any national policy.

RECOMMENDATION 9

The policy framework should specify enforcement mechanisms and establish systems for their implementation. In this respect, the framework should include clear definitions of sanctions and could include a system for reporting complaints.

RECOMMENDATION 10

All policy frameworks should include a monitoring system to ensure compliance with the objectives set out in the national policy, using clearly defined indicators.

RECOMMENDATION 11

The policy frameworks should also include a system to evaluate the impact and effectiveness of the policy on the overall aim, using clearly defined indicators.

RECOMMENDATION 12

Member States are encouraged to identify existing information on the extent, nature and effects of food marketing to children in their country. They are also encouraged to support further research in this area, especially research focused on implementation and evaluation of policies to reduce the impact on children of marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt.

Annexure 3

The Norms and Calculations used in the Model

- The daily energy requirement is approximately 2000-2150 kcal for a 10-11-year-old, moderately active female and male child respectively. Therefore an average of 2000 kcals is used as the energy intake for calculation of Thresholds ³². This model is targeted towards children of all ages and both sexes and activity levels.
- Approximately 25% of the energy requirement is from each main meal (3 meals/day) and 10-12% from snacks (2 snacks/day)³³. Therefore, thresholds have been calculated on the basis that each 100 g of the product provides approximately 230 kcals. This energy level also aligns with the threshold energy content of foods defined as energy dense by various agencies. ^{34 35} For some food categories, energy, fat, sugar and sodium values for products as stated in the USDA food composition data base have been used for setting thresholds.
- Sodium thresholds are based on the rationale that if the ratio between the amount of sodium (mg) in any quantity of the product and the energy content (kcal) is equal to or higher than 1:1, the product is considered excessive in sodium. The ratio is derived from a maximum recommended daily intake of 2000 mg of sodium, the WHO limit for adults, on an average total daily energy intake of 2000 kcal. ^{18 27} The threshold is set at 1 mg sodium:1 kcal energy or lower wherever possible.
- Sugar thresholds are based on the rationale that a product is considered excessive in free sugars, if in any given quantity of the product, the amount of energy (kcal) from free sugars [free sugars (g) x 4 kcal] is equal to or higher than 10% of the total energy (kcal) for the product. A lower threshold of 5% is used for sugar-sweetened beverages. ²⁸
- Total fat is considered excessive, if in any given quantity of the product the amount of energy (kcal) from total fats [total fats (g) x 9 kcal] is equal to or higher than 30% of the total energy (kcal) and excessive in saturated fats, if in any given quantity of the product the amount of energy (kcal) from saturated fats [saturated fats (g) x 9 kcal] is equal to or higher than 10% of the total energy (kcal).¹⁸

Annexure 4

Justifications / Explanations for Thresholds*

Food Category		Examples of food items	Justifications / Explanations
1	Confectionery	Cocoa/chocolate bars, spreads, including imitations and chocolate substitutes, hard, soft and chewy candies, chewing gum, marshmallow, sweet sauces, topping sauces, creamy desserts, sweet desserts, traditional desserts (Oil cakes, Kevum, Pani walalu, Laddu, Mascut, Bundhi), Diet Jelly, Jelly Jelly Candies, kisses, Jujubes, chocolate spread, Toffee, Lozingers, Thodol /dodol	<ul style="list-style-type: none"> On a 2000 kcal diet, based on the assumption that one snack would contribute 11.5% of total energy intake/day, the energy contribution from a snack is approximately 230 kcal or less. Thus, 230 kcal or more /per 100g snack could be classified as an energy dense snack. Therefore, 230 kcal/100g is set as a threshold for energy and also used for calculation of thresholds for fat and sugar. The thresholds for fat and sugars are set based on WHO/FAO population nutrient intake goals that fats and simple sugars should contribute to 30% and 10% of total energy, respectively. <p>Sample calculation:</p> <ul style="list-style-type: none"> Energy contribution from 30% fat = $230 \times 30/100 = 69$ kcal. Conversion to grams = $69/9 = 7.6\text{g}/100\text{ g}$ Energy contribution from 10% sugar = $230 \times 10/100 = 23$ kcal. Conversion to grams = $23/4 = 5.7\text{g}/100\text{g}$
2	Fine bakery wares	Cakes, cookies, pies, doughnuts, sweet rolls, scones, muffins, macaroons, gingerbread, biscuits, wafers, pancake	<ul style="list-style-type: none"> This group is also considered as snacks and thresholds for energy, fat and sugar were calculated based on the same rationale as mentioned in the category 1. Sodium intake is calculated based on WHO/FAO population nutrient intake goals as 1 mg/1 kcal, or lower (based on the recommendation of 2000 mg /2000 kcal).
3	Bread and ordinary bakery wares	bread and rolls, Pita, English muffins, Nan rote, steamed bread, steamed bun, bread and ordinary bakery wares, diet bread, Paratha roti	<ul style="list-style-type: none"> On average, energy from bread, a staple food is 250 kcal/100g. (USDA Food Composition Databases, https://ndb.nal.usda.gov) This average amount of energy (250 kcal) is used for calculation of thresholds for fat, salt and sugar based on WHO/FAO population nutrient intake goals. This sugar content is also adequate for yeast-leavened products.

Food Category		Examples of food items	Justifications / Explanations
4	Cereals	Whole, broken or flaked grains of rice and other cereals, Rice-based, wheat-based or maize-based breakfast cereals of all flavours, oatmeal, muesli, granola and muesli bars, cereal bars, rice cakes, Choco Blobs, whole grain corn flakes, Samaphosa, Suposha,	<ul style="list-style-type: none"> The thresholds for cereals are based on average energy levels in commercial breakfast cereals, which are approximately 350 kcal/100 g. (https://ndb.nal.usda.gov/ndb/search/list), which is used for calculation of thresholds for fat, salt and sugar based on WHO/FAO population nutrient intake goals.
5	Ready-to-eat savouries (savoury snack foods)		
5a	Potato, cereal or starch-based (from roots, tuber, or legumes) and animal-based (from skin)	Popcorn and maize corn, savoury biscuits, crackers, other snacks made from rice, maize, wheat, dough, or potato (i.e. chips, crisps), varieties of Papadam Savoury Nut biscuits, Murukku, Spicy Bites, French fries	<ul style="list-style-type: none"> This group is also considered as snacks and thresholds for energy, fat and sugar were calculated based on the same rationale as mentioned in the category 1. The average energy content of most snacks of this type is 200-300 kcal/100 g. Sodium content should be limited to 230 mg/100 g (1 mg/1 kcal), which is feasible since the sodium contents in these products is usually in the range of 100- 1,800 mg/100 g (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).
5b	Processed nuts	Nuts, and mixed nuts (including with fruit content) Eg: Cashew nut, Peanuts, Mixed nuts	<ul style="list-style-type: none"> The sodium threshold indicated is for unsalted nuts and accounts for the natural sodium in different varieties of nuts (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). No limit is given for total fat since fat content varies significantly between kinds of nuts and nuts contain healthy fats. This criterion aims for nuts that are not deep fried. Addition of 2g of sugar to 100g of nuts is allowed to promote culturally valued nut based preparations such as “Pani kaju”.

Food Category	Examples of food items	Justifications / Explanations	
6	Beverages		
6a	Juices	100% fruit and vegetable juices as well as nectar prepared from direct extraction/ harvesting or reconstituted from the concentrate and freshly squeezed natural fruit juices	<ul style="list-style-type: none"> WHO guidelines recommend limiting intake of all sources of free sugars, i.e. sugars naturally present in honey, syrups, fruit juices, which may also contribute to excess energy intake. WHO recommendation on free sugars consumption is 10% of total energy intake and the desirable recommendation is to reduce to 5%. Most 100% fruit juices contain sugar of 10-14 g/100 g. By mixing fruit with vegetable juice, the sugar content can be reduced. Coconut water contains approximately 6 g/100 g of sugar and therefore, the threshold for sugars is set at 6g/100g. However, the freshly squeezed natural fruit juices <u>without added sugar</u> are exempted from the sugar threshold.
6b	Milk and dairy-based drinks.	Milk, buttermilk, flavoured dairy-based milk, fermented dairy-based milk e.g. Chocolate milk, milk, cocoa, drinking yoghurt, Whey-based drinks. Ice coffee (Milk means milk from animals such as cow, goat etc.)	<ul style="list-style-type: none"> The fat threshold is set for cow's milk as buffalo milk is usually not consumed as a drink in Sri Lanka (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). Addition of 2g of sugar to 100 ml of milk is allowed as a strategy of gradual reduction of sugar in milk. However, 'no added sugar' need to be considered in the next revision / update
6c	Water based flavoured drink	Sport, energy, electrolyte drinks, isotonic drinks, carbonated and non-carbonated water-based flavoured drinks, Concentrates (liquid or solid) in or calculated as ready-to-drink form.	<ul style="list-style-type: none"> The usual energy content in such beverages is approximately 150 kcal. WHO's recommendation to reduce sugar to 5% is used as the principle for setting the threshold of 2g/100g. The sodium threshold is set according to the sodium content in electrolyte drinks. (http://www.ausport.gov.au/_data/assets/pdf_file/0008/594170/CORP_33413_SSF_Sports_drinks_FS.pdf).
6d	Coffee, coffee substitute, tea, herbal infusion	Coffee, Coffee substitute, tea, Herbal infusion, Ice Tea, instant coffee or tea.	<ul style="list-style-type: none"> A threshold similar to water-based beverages has been set for sugar.

Food Category		Examples of food items	Justifications / Explanations
6e	(e) Cereal, grain and tree nut-based beverage	Cereal, grain and tree nut-based beverages produced from the extracts of cereals, beans, pulses and tree nuts e.g. rice-, almond-, soybean-, oat-based beverage, Malted powder, Soya milk, kola kenda.	<ul style="list-style-type: none"> • Cereal, grain and tree nut-based beverages consist of water and sugar as well as protein and starch. • The limitation is on sugar, which is allowed to be higher than in flavoured drinks in order to make it palatable. Therefore, the same threshold used for juices is used for these beverages. • The sodium content is limited based on what is usually found in commercial products (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).
7	Frozen dairy-based desserts and edible ices	Ice cream, ice milk, frozen flavoured yoghurt, iced lollies and sorbets	<ul style="list-style-type: none"> • This group is also considered as snacks and thresholds for energy, fat and sugar were calculated based on the same rationale mentioned in the categories 1. (fats and simple sugars should contribute to 30% and 10% of total energy, respectively) • However, a wide range of fat content found in these groups of products (range 1.6-20 g/100 g), but 8 g fat/100g is feasible in ice-cream making. • The threshold for fat increased to 10g / 100g taking the concerns of the food manufactures into accounts as they cannot be adjusted exactly to least feasible level (8 g fat/100g) during the processing. • The threshold for sugar is set as 12 g/100 g, since low sugar creates a non-bitable hard ice crystal (icecreamsience.com/sugar-in-icecream), This level of sugar is similar to natural fruit juice and provide an acceptable taste similar to a sorbet. • However, the threshold for sugar need to be considered for reduction in the next revision / update • Sodium content is based on what generally found in manufactured products. Sodium intake is calculated as lower than 1mg/1 kcal (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).

Food Category		Examples of food items	Justifications / Explanations
8a	Curded dairy-based desserts except Yoghurt	The dairy-based products that have been curded by fermentation, acid, enzyme, heat, etc. and flavoured with sugar and other ingredients. Examples are flavoured cream type jellied milk, junket, butter scotch pudding, chocolate mousse, khoa, peda, burfee, milk cake, gulab jamun, rasgulla, Curd	<ul style="list-style-type: none"> This group is also considered as snacks and the threshold for energy is calculated based on the same rationale mentioned in category 1. These products are good sources of protein and energy. The fat threshold considers the use of buffalo milk and is set for buffalo milk. Sodium content is based on what generally found (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). However, those milk desserts, specially curd is not traditionally sell with added sugar. Hence, added sugar is not allowed in this category.
8b	Yogurts	All types of Yogurts	<ul style="list-style-type: none"> Energy is calculated based on the average energy content of the products available in the local market. These products are good sources of protein and energy. The fat threshold considers the use of cow's milk and is set for cow's milk. Sodium content is based on what generally found (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). 12g of total sugar / 100 ml is allowed as a strategy of gradual reduction of sugar in yogurts considering the possibility of manufacturing and current sugar levels
9	Cheese and analogues	Unripened cheese, ripened cheese, whey cheese, processed cheese, cheese analogues, whey protein cheese (e.g. ricotta) that can be classified based on physical characteristics as hard (e.g. Parmesan), semi-	<ul style="list-style-type: none"> Cheese is a good source of protein and calcium. The kind with a lower moisture content (hard cheeses) normally contains more protein and calcium as well as fat and sodium. The fat content allowed is for semi-hard cheese that is generally consumed

Food Category	Examples of food items	Justifications / Explanations
	hard (e.g. cheddar, Colby), medium-hard (e.g. emmental, edam), semi-soft (e.g. munster, port salut) and soft (e.g. mozzarella, chenna paneer, cottage) as well as serving style as slice, grated or spreadable.	<ul style="list-style-type: none"> Sodium content is allowed at the technically feasible level for production. Salt is required in production step especially water removal such as cheddaring.
10 Composite foods (Prepared foods)	Mixtures of multiple components (e.g. meat, sauce, grain, cheese, vegetables). The prepared foods include the food s that require minimal preparation by the consumer (heating, thawing, rehydrating) or the ready-to serve meal from restaurants. Examples are frozen and chilled ready meals, hamburger, fried chicken, pizzas, lasagne, Fried Rice, Kotthu roti ready-made sandwiches, soups, instant noodles, instant porridge, Herbal Porridge, steamed pork buns, dumplings, burgers in buns, ready meals	<ul style="list-style-type: none"> The thresholds have been calculated as per 350kcal/100g since most available products are estimated to contain an energy range of approximately 250 -450 kcal/100g (average 350kcal). As recommended in WHO/FAO population nutrient intake goals fat, saturated fat and sugar should contribute to 30% and 10% respectively. Sodium threshold is set at 1mg/1 kcal.
11 Fats and oils, and fat emulsions	Butter oil, anhydrous milk fat, ghee, vegetable oils and fats, lard, tallow, fish oils and other animal fats, butter, margarine and similar products. Examples are cooking oils from plant and animal sources, butter, margarine, fat blends. Spreads, vanaspathi, vegetable ghee, Coconut oil and spreads, other fat spreads	<ul style="list-style-type: none"> Fat and oil are good sources of energy. The concern is regarding the quality of fat, especially the ratio of saturated fat which should not be more than 1/3 of consumed fat or oil. As mentioned in the population nutrient intakes, total energy contribution from fat and saturated fat should be less than 30% and 10%, respectively, of which saturated fat should be 1/3 of the total fat (weight for weight). Sodium threshold is set as the lower range of sodium is manufactured products (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).

Food Category	Examples of food items	Justifications / Explanations
12	Pasta and noodles and like products	<p>Fresh, pre-cooked or dried pasta and noodles and like products, rice paper, dried string hoppers , Vermicelli that made from rice, wheat, tapioca, sago, legume etc. These products are aimed to use as staple ingredients in a main dish or dessert.</p> <ul style="list-style-type: none"> These products are normally consumed as a staple, which should contribute 25% of total energy intake or 500 kcal on a 2000 kcal diet. The energy content in such products is approximately 250 kcal/100g. Since pasta and noodles are usually consumed in combination with other foods as a meal, it is assumed that half the energy (250 kcal) is from 100 g of pasta/noodle, and the other half would be possibly from a sauce, vegetable or meat preparation which would also contribute sodium to the meal. Pasta and noodle-like products mainly consist of starch but the pre-cooking process may also include deep-frying where the fat content can be as high as 20 g fat/100g product. Therefore, the fat threshold is set to discourage the production/marketing of deep fried products. The threshold for sodium from pasta is limited at about 250 mg /100 g (1 mg of sodium: 1 kcal).
13	Fresh and frozen meat, poultry, game, fish and seafood products	<p>Fresh and frozen meat, poultry, game, mollusks, crustaceans, echinoderms in the forms of whole pieces, cuts/fillet, comminuted/ minced/ creamed. dried seafoods Examples are beef, pork, chicken, lamb, goat, tuna, mackerel, catfish, shrimp etc. ,</p> <ul style="list-style-type: none"> Animal meat is a source of good quality protein for children. However, some parts have a high content of fat which should be avoided. Lean meat and chicken can contain up to 15g fat / 100g, Beef –up to 25g, Lamb - up to 25g and Pork - up to 20g / 100g and therefore, these limits have been set with the suggestions of the industries taken into account (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).
14	Processed meat, poultry, game, fish and fish products	
14a	Processed meat, poultry and game products	<p>Non-heat and heat treated whole pieces or cuts or commuted meat poultry and game that have been cured/ cured and dried, or fermented. Examples are smoked ham,</p> <ul style="list-style-type: none"> Cured meat products are also sources of protein and fat and used in situations where fresh meats may be unavailable. Some products, however, contain high fat, especially saturated fat (from added animal fat) as well as sodium from salt that is used

Food Category	Examples of food items	Justifications / Explanations
	<p>salted dried meat, fermented sausages, salami, sausage, ham, bacon, corn beef, salted pork, smoked duck, canned meat (e.g. canned ham, canned chicken, canned corn beef), chicken nuggets, beef or chicken patty, pork rind, mini kievs, meatballs, chicken kurma, Corn meat</p>	<p>for processing and flavouring. Fat is normally added to provide soft and chewy texture to meats such as sausages and sodium chloride is necessary for the flavouring and salting-in process of meat protein that acts as an emulsifier or binder.</p> <ul style="list-style-type: none"> It is feasible to produce processed meat with a lower fat and sodium content and the thresholds are set considering manufactured products with the lower range of fat and sodium values (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). However, saturated fat is limited to 1/3 of total fat.
14b Processed fish and seafood products	<p>Frozen battered, cooked and/or fried, smoked, dried, fermented, and/or salted, semi-preserved by pickling or brining, fully preserved by canning or fermentation of fish and seafoods.</p> <p>Examples are salted fish and seafood, brined fish, salted fish in oil, fermented fish and seafood, anchovies, shrimp paste, pickled mollusks, canned tuna, canned sardine, canned mackerel, smoked fishes, dried shrimp, fish balls, fish finger, tempura shrimp, Fish mini keiw</p>	<ul style="list-style-type: none"> Fish and seafood are locally available in many parts of the Region and are preserved locally by using salt or by canning, battering, or frying. Some forms of preservation can cause overconsumption of saturated fat and salt. The fat content is limited to 8 g/100g, as found in the drained canned tuna in oil (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov.) Saturated fat is limited to 1/3 of total fat. Sodium content can be from salt added for both processing and flavouring, it is therefore reduced from usual levels of 900-1,000 mg (https://www.caloriecount.com/calories-white-fish-ball-i132121) to 400 mg/100 g.
15 Fresh and frozen fruits and vegetables, and legumes	<p>Fruits, vegetables, mushrooms and fungi, roots and tubers, pulses and legumes, nut and seeds, seaweeds.</p>	<ul style="list-style-type: none"> Fresh fruits and vegetables are sources of dietary fiber, vitamins and minerals and increased consumption should be encouraged. Therefore, food in this group is permitted without any restrictions.

Food Category	Examples of food items	Justifications / Explanations	
16	Processed fruits and vegetables	<p>Dried, canned or bottled, jam, Fruit jellies, marmalades, packed in vinegar, oil or brine, pickles, spreads, candied, pulp, purees, topping, cooked forms of fruits and vegetables. Examples are fruits and vegetables in vinegar, oil or brine, dried fruits, coconut cream, marmalade, jams, canned fruits, vegetables and legumes, dried mushrooms, preserved or pickled fruits and vegetables, pickled tea leaves, peanut butter, date</p>	<ul style="list-style-type: none"> Processing of fruits and vegetables aims to preserve fruits and vegetables for a longer shelf life. However, processing tends to change the natural nutrient content due to concentration or addition of sugar or sodium. Pickled fruits and vegetables should not be promoted in children. If pickling is done as a means of preservation, minimum sodium should be used. Dried fruits and vegetables with no sugar and salt added can be promoted in children during off-seasons since about 50 gram of dried fruits and vegetables can be equal to 600 g of fresh fruits and vegetables. <p><i>Calculation: Based on the assumption that fresh fruits and vegetables have a moisture content of approximately 93% and 7% of solids, and dried fruits and vegetables have moisture content of approximately 10% and 90% of solids, 50 g of dried fruits and vegetables = $0.93 \times 50 \text{ g} / 0.07 =$ would be approximately equivalent in weight and volume to 664 g of fresh fruit or vegetable approximately).</i></p> <ul style="list-style-type: none"> Added sugar up to 2g / 100g is allowed to consider some traditional food items such as 'sugar coated dried jack'.
17	Solid-form soybean products	<p>The soybean-based film, soybean curd (tofu), semi-dehydrated tofu, dehydrated tofu (kori tofu), fermented soybeans (natto, tempeh), other soybean protein products (soya nuggets and textured vegetable protein)</p>	<ul style="list-style-type: none"> Soybean is a good source of protein, calcium and polyunsaturated fatty acids. Different solid forms of soybean products are consumed in Asia.
			<ul style="list-style-type: none"> The fat threshold is set at 12g/100g based on the fat content of tempeh which is approximately 11.5%. Total sugar is set at 8 g/100g based on the explanations and concerns raised by food industries.

Food Category	Examples of food items	Justifications / Explanations
18a	Sauces, dips and dressings Emulsified, nonemulsified mixes as concentrated, clear sauces and like products, Condiments and Yeast Extracts, Examples are mayonnaise, salad dressing, onion dips, tomato ketchup, coloured ketchup, gravy, cheese sauce, cream sauce, fermented and non-fermented soy sauces, fish sauce, sweet chili sauce, spaghetti sauce, BBQ sauces, chili paste, chutney, Yeast Extracts, Seenii Sambal, Katta Sambal /Lunu miris	<ul style="list-style-type: none"> These products are usually eaten in small portion sizes of 10- 30 g. In 100 g of product, the content of sodium is approximately 300-1400 mg/100g, fat content ranges from 5-60g/100g fat, and sugar content is 3-22g/100g. For sodium, a limit of 350 mg, the lower threshold found in tomato sauce is set, which would make only a small contribution to sodium intake, considering the small portion size consumed. For fat, a threshold of 12g/100g is set considering the lower limits found in manufactured products (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov). For sugar, a threshold of 20g is set considering the standards of Sri Lanka Standard Institute and preservative action of sugar in the products. However, the threshold for sugar need to be considered for reduction in the next revision / update
18b	Seasoning soybean-based seasoning, Seasoning powder, Biriyani Masala mix, Seasoning cubes, bouillon cube	<ul style="list-style-type: none"> For sodium, a limit of 350 mg, the lower threshold found in tomato sauce is set, which would make only a small contribution to sodium intake, considering the small portion size consumed. For fat, a threshold of 12g/100g and for sugar, a threshold of 10g / 100g is set considering the lower limits found in manufactured products (<i>USDA Food Composition Databases</i>, https://ndb.nal.usda.gov).

* All thresholds have been rounded up to the nearest whole number to allow for minor variation in product categories

Contributors for Consensus Building

- Dr. L.B.H. Denuwara
Former Director, Nutrition Division,
Ministry of Health
- Dr. Shanthi Gunawardana,
Consultant Community Physician,
Non-Communicable Disease Unit,
Ministry of Health
- Dr Hiranya Jayawickrama,
Consultant Community Physician,
Family Health Bureau,
Ministry of Health
- Dr. Chiranthika Vithana,
Consultant Community Physician,
Family Health Bureau,
Ministry of Health
- Dr. D. Rowel,
Consultant Community Physician,
Family Health Bureau,
Ministry of Health
- Dr. K.Y.P.K. Weerasekara,
Consultant Community Physician, Nutrition Coordination Division, Ministry of Health
- Dr. M. Senaviwickrama,
Consultant Community Physician, Nutrition Coordination Division, Ministry of Health
- Dr. Janaka Weragoda
Consultant Community Physician,
RDHS office, Colombo.
- Dr.I.A.Thalagala - Senior Registrar in Community Medicine, Non Communicable Disease unit, Ministry of Health
- Dr. Nayana Premasinhe - Medical Officer (MCH), RDHS Office, Kurunegala
- Dr. Erandi De Silva - Medical Officer, Nutrition Division, Ministry of Health
- Dr. Chameera Yapa - Medical Officer, Nutrition Division, Ministry of Health
- Dr. Nipuni Amarasinghe - Medical Officer, Nutrition Coordination Division, Ministry of Health
- Dr. Palika Weerasinghe - Medical Officer, Nutrition Coordination Division, Ministry of Health
- Dr.Pamod Amarakoon - Medical Officer, Nutrition Coordination Division, Ministry of Health
- Dr.B.D.A. Fernando. Medical Officer, Environmental, Occupational Health & Food Safety Unit, Ministry of Health
- Dr.H.M.S.K.Herath, Medical Officer, Environmental, Occupational Health & Food Safety Unit, Ministry of Health

- Dr.K.A.G.Perera, Medical Officer, Nutrition Unit, Medical Research Institute, Ministry of Health
- Mr.J.K. Jayasinghe - Assistant Director, Food Control Administration Unit, Ministry of Health
- Mr S.T. Abouthaly, Assistant Director, Food Control Administration Unit, Health
- Mr. J.M. Rambanda - Nutrition Assistant, Medical Research Institute, Ministry of Health.
- Mr.A.B.G.Silva, Chemist, Medical Research Institute, Ministry of Health.
- Ms.Y.N.Amarathunga, Research Officer, Medical Research Institute, Ministry of Health.

- Dr. Carukshi Arembepola, Senior Lecturer, Faculty of Medicine, University of Colombo
- Mr. Malik De Alwis - President/ Sri Lanka Food Processors Association.
- Representatives from Ceylon Chamber of Commerce.
- Representatives from Consumer Affairs Authority, Sri Lanka.
- Representatives from the Ministry of Education, Sri Lanka.
- Representatives from Sri Lanka Food Processors Association.
- Representatives from Sri Lanka Standard Institution