Training Manual for Primary Healthcare Providers on Promoting a Healthy Diet

Directorate of Non Communicable Diseases,
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Training Manual for Primary Healthcare Providers on Promoting a Healthy Diet

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Chapter 1

Introduction

All human beings need to consume food and water, to continue with life. Food and water are essential requirements for life and are considered a basic human right, as well as a legal right, as per article 25 of the United Nations Human Rights Charter (Office of the UN High Commissioner for Human Rights, 2010), on the right to an adequate standard of living. However, excessive intake of food and water, and the intake of unhealthy food can lead to illness and disease.

An unhealthy diet is a major risk factor for the development of Non-Communicable Diseases (NCDs) among the human population. In addition, reduced physical activity, alcohol consumption, smoking and tobacco use, and air pollution are the other main risk factors for the development of NCDs. The main NCDs are the ischaemic heart disease and related Cardiovascular diseases, Diabetes Mellitus, Stroke and Chronic Obstructive Pulmonary Disease (COPD). Non-Communicable diseases were the leading cause of human mortality and morbidity, accounting for approximately 74% of global deaths in 2019. The leading cause of death had been ischaemic heart disease causing 16% of global deaths, followed by stroke (11% of deaths) and COPD causing 7% of deaths. Diabetes mellitus and related complications had been the 9th main cause of death in 2019, with the highest percentage rise in male deaths(Ref – WHO report). This trend had been for the Low- and Middle-Income countries, which includes Sri Lanka as well.

It is of utmost importance that screening for NCDs needs to be conducted at a very early stage of adulthood and followed up with periodic screening for early identification and prevention. For those who have been affected by NCDs, it is important to undergo regular periodic follow-ups to prevent the development of complications. Early identification and management can lead to a significant reduction in the mortality and morbidity associated with NCDs.

There are approximately 1000 Healthy Lifestyle Centers (HLC) established at government hospitals mainly at primary care level all over Sri Lanka, and they provide basic screening for NCDs. These services include assessment of behavioural risk factors, (risk of overweight/obesity, use of tobacco and alcohol etc.), anthropometric

assessment (Body Mass Index (BMI)), bio-chemical assessment for intermediate risk factors such as blood sugar and cholesterol levels, assessment of CVD risk, referral of persons with NCDs to the medical clinics, and brief interventions for behavioural change for those with risk factors for NCDs.

Health staff at the HLCs and primary healthcare centers are the first point of contact for the local communities, and hence, these healthcare staff should be competent on promoting a healthy lifestyle, including promotion of a healthy diet. In this regard, Nutrition Division of Ministry of Health has already published the latest version of Food Based Dietary Guidelines" for Sri Lankans, which contain specific information on foods, food groups and dietary recommendations to provide the required nutrition for the Sri Lankan population. However, these guidelines and practices need to be included in a healthy diet promotion programme, which will carry the message to the community. Developing a training module for the promotion of a healthy diet, for the HLC staff to guide them, and to make them knowledgeable about the latest recommendations on promotion of a healthy diet for the community, is an important requirement. Towards training these HLC staff, each district is expected to have trained, competent master trainers, who can conduct the community level trainings and provide guidance. Hence, a Trainers' guide is an important tool which will ensure proper guided training is provided to the frontline healthcare workers.

This training package has been designed to be used by the master trainers (District MO NCDs and Hospital MO NCDs), to train the primary health care staff affiliated to the HLC, on promoting a healthy diet to the HLC clients and the community.

Chapter 2

Healthy diet and NCDs

2.1 Healthy diet

Food and drinks usually consumed by a person or persons are commonly termed as "diet" (Cambridge online dictionary, 2021), and for a healthy life, it is important to consume a healthy diet. As defined by the technical group in their scientific paper for the 2021 United Nations Food Systems summit, "A healthy diet" is a diet which is health-promoting and disease-preventing, and provides adequacy without excess, of nutrients and health promoting substances from nutritious foods, and avoids the consumption of health-harming substances" (Neufeld, Hendriks & Hugas, 2021).

2.2 Importance of a healthy diet

Considering the epidemiology of NCDs and their related deaths and disability, it can be observed that the diet is a major contributory factor for cardiovascular diseases including ischaemic heart disease, cerebrovascular diseases including stroke, and diabetes mellitus and its related complications.

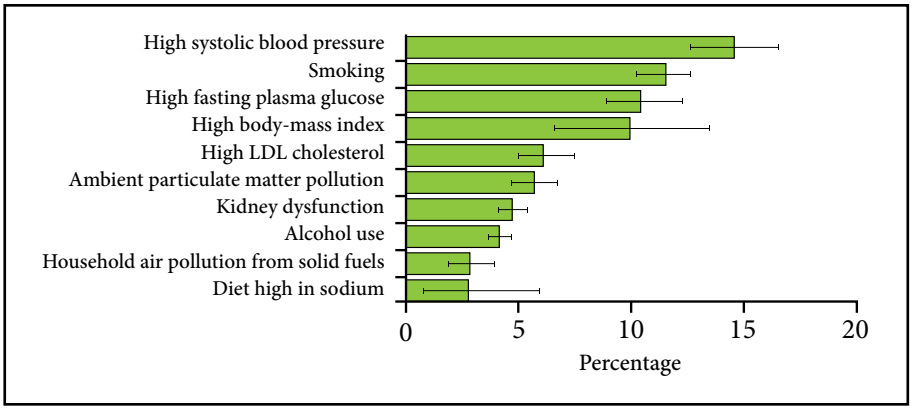


Figure 1–Global:Percentage of DALYs attributable to top risk factors for NCDs for both sexes combined, 2019 (Global Burden of Disease study 2019)

As highlighted by the Global Burden of Disease study (Institute of Health Metrics and Evaluation, 2021) and depicted above (Figure 1), five of the top ten leading risk factors for NCDs globally are diet related, Therefore, it is of utmost importance that a healthy diet is promoted in the community, to reduce the burden of NCDs.

A healthy diet protects against the development of a majority of the NCDs (WHO Fact Sheet - Healthy diet, 2021). The healthy diet consumed by the mother during the antenatal period, and thereafter, provided to the children from the early stages of childhood, will ensure that children will remain protected from NCDs for a longer duration of their lifetime, and they will achieve maximum potential as adults. It is further elaborated that the exact make-up of a diversified, balanced, and healthy diet will vary depending on individual characteristics of the persons such as their age, sex, occupation, level of education etc., the socio-cultural practices, locally available foods and dietary customs. However, the basic principles of what constitutes a healthy diet remain the same.

The modern, fast paced, technologically innovative world is unfortunately making it a challenge for people to consume a healthy diet. Increased production of processed food, rapid urbanization and freely available, cheap fast foods have led to a change in the dietary pattern of the people. Not only adults, but also the children are shifting away from healthy foods, towards these unhealthy processed foods. High consumption of sugar, salt and fat are the main risk factors for the development of NCDs. Along with this shift, the consumption and availability of fruits and vegetables have drastically reduced, and thereby, the preparation of a healthy meal itself has become quite challenging.

Water is an essential component of a healthy diet and adequate water intake is important to ensure the hydration status of the body. According to the FBDG for Sri Lankans, an adult would require approximately equivalent to the value body weight (kg) divided by 30 liters of liquid per day (Ministry of Health, 2022). Good hydration is essential for proper digestion and utilization of nutrients, as well as for optimum cellular functioning.

2.3 Diet Low in Sugar

Sugar is a very common food additive which is added to make the food taste sweet. Sugar is consumed directly by adding it to tea, milk, and other beverages. Sugar is also added as an important ingredient to all cakes and bakery products. Most of the commonly consumed bakery products such as biscuits, doughnuts, and other sweet bakery products have a high sugar content. In addition, naturally occurring sugar is present in honey, syrups, and fruit juices. However, sugar in the diet is one of the main causes for development of overweight and obesity and Diabetes among the community (WHO Initiative: Healthy Diet, 2021).

The WHO advises to limit the intake of free sugars to less than 10% of total energy intake in a healthy diet (WHO Initiative: Healthy Diet, 2021). This approximately indicates an intake limit of 6-12 teaspoonfuls of sugar per person per day depending on the physiological stage, in all forms, as directly added sugar and indirectly consumed sugar. A further reduction to less than 5% (less than 6 teaspoon full of sugar per day) of total energy intake is suggested for additional health benefits (WHO Fact Sheet - Healthy diet, 2021).

2.4 Diet Low in Salt

Salt is a food additive which is commonly used for increasing the palatability of food and is also an important nutritional source of the minerals sodium and chloride. In addition, due to the current iodination of salt, most of the iodine requirement of the body is also obtained from dietary salt consumption. However, salt, when consumed in excessive amounts, is one of the main risk factors for developing Hypertension and other cardiovascular diseases (WHO Initiative: Healthy Diet, 2021).

As recommended by the WHO, the current dietary recommendation of salt intake is less than 5g (one teaspoon) per day per person. This indirectly reflects a reduction in sodium intake to less than 2g per person per day (WHO Fact Sheet - Healthy diet, 2021). However, in Sri Lanka, most households are consuming a much greater amount of salt as they add salt to almost all curries, and some add it to rice as well. In addition, all types of fried rice, kottu, noodles and other main meals are very high in added salt content. Hence, the National Salt Reduction Strategy has been introduced through which Sri Lanka has initiated activities to reduce salt consumption (National Salt Reduction Strategy 2018 – 2022, 2018).

2.5 Diet Low in Fat including Trans-fats

Fats are the most important dietary source of energy for humans. In addition to the carbohydrates, fats provide energy for the body to utilize for it's daily metabolic activities. However, excessive intake of fat leads to fat deposition and thereby, cause overweight and obesity. In addition, fats are composed of several components, mainly cholesterols and fatty acids. Among these components, saturated fatty acids and trans-fatty acids, which are considered to be unhealthy, as they lead to the development of numerous unhealthy fat deposits which lead to atherosclerosis and ischaemic cardio- and cerebro-vascular diseases (WHO Fact Sheet - Healthy diet, 2021).

The WHO recommends that the energy intake should be balanced with the energy expenditure, to prevent unnecessary fat deposition and obesity, and hence, to limit

the total fat intake to less than 30% of the total energy intake. They further advise that the intake of saturated fats should be less than 10% and trans-fats intake should be less than 1% of total energy intake (WHO Fact Sheet - Healthy diet, 2021). In addition, WHO is aiming at eliminating the industrial production of trans-fats, which includes bakery products as well.

Chapter 3

Healthy Diet and NCDs in Sri Lanka

The situation with regard to the NCDs in Sri Lanka is similar to the other Low- and Middle- income countries in the region.

As per the Annual Health Bulletin of 2019 (Ministry of Health, 2021), published by the Ministry of Health, 50.7% of hospital deaths in 2019 had been due to the NCDs. The leading cause had been ischaemic heart disease, while non-infectious diseases of the respiratory system including COPD, and cerebro-vascular diseases including stroke were among the top 10 causes of deaths (Figure 2). In addition, the proportionate mortality rate due to diabetes and hypertension had also increased compared to 2018.

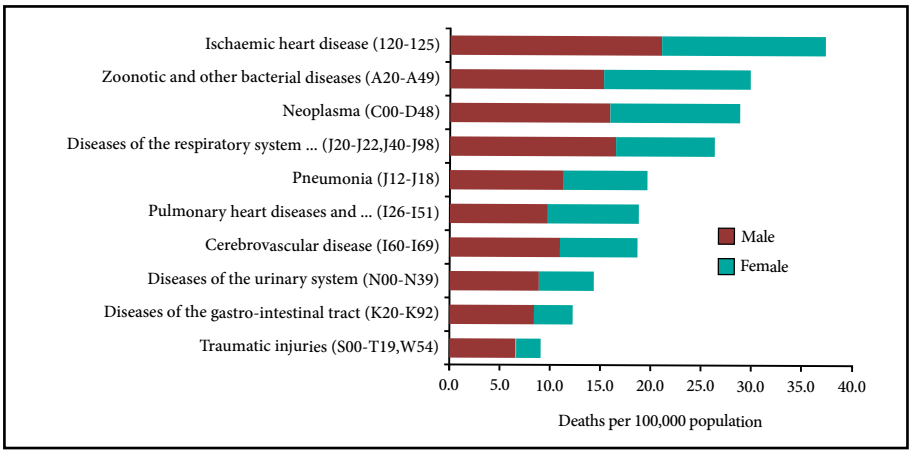


Figure 2–Sri Lanka :Leading Causes of Hospital Deaths in Sri Lanka – 2019 (Annual Health Bulletin 2019 – Ministry of Health)

Considering the population-based estimates of disease specific deaths in Sri Lanka, Global Burden of Disease study in 2019 (Institute of Health Metrics and Evaluation - Sri Lanka, 2021).indicates that the top six leading causes of deaths in the country were NCDs (Figure 3). Among these, the leading cause was ischaemic heart diseases, followed by stroke and thereafter by diabetes, all three being the outcome of an unhealthy diet.

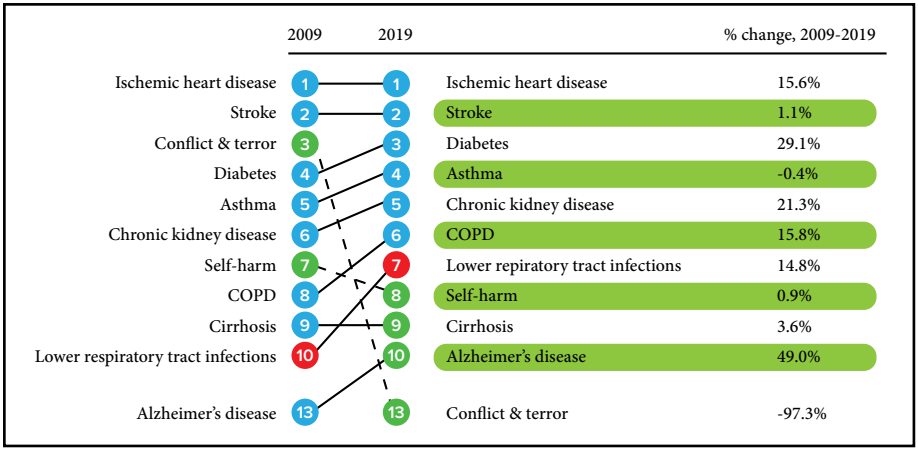


Figure 3–Sri Lanka :Top 10 causes of total number of deaths in 2019 and percent change 2009–2019, all ages combined (Global Burden of Disease study 2019)

In addition to the deaths, disability is another main outcome of NCDs. Lifelong dependence on medication, limitations on physical activity as well as physical disabilities such as complete paralysis and limb amputations are some of the main disabilities resulting due to NCDs. The Global Burden of Disease study in 2019 has estimated that among the Sri Lankan population, the three-leading cause of death and disability (measured using Disability Affected Life Years - DALYs) are all unhealthy diet related NCDs (Figure 4).

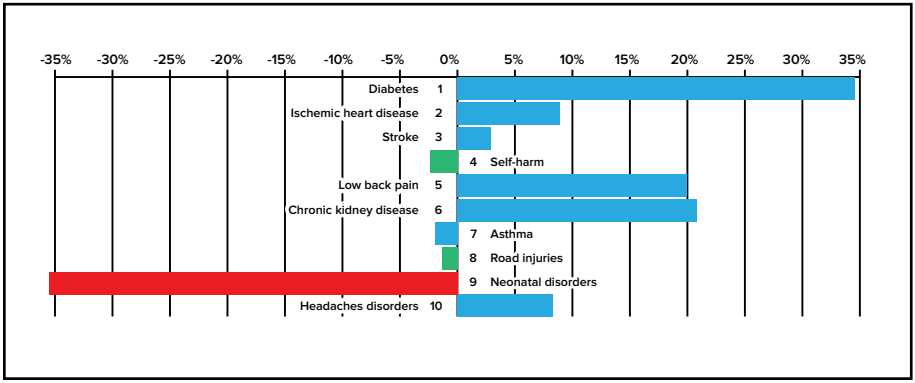


Figure 4–Sri Lanka :Top 10 causes of death and disability (DALYs) in 2019 and percent change 2009–2019, all ages combined. (Global Burden of Disease study 2019)

The STEPS survey 2021 conducted among 18 to 69 years old Sri Lankan adults, had reported that approximately 39.4% had a Body Mass Index (BMI) greater than 25 kgm^{-2}, indicating overweight or obesity. In addition, approximately 38.4%of adults were estimated to have either raised blood sugar levels or were currently on medication for diabetes. Approximately 48.7% of adults were estimated to have raised blood cholesterol levels (> 190 mg/dl) or were on treatment for raised blood cholesterol.

The Global Burden of Disease study in 2019 highlighted that it is estimated among the top 10 risk factors for DALYs in 2019 for Sri Lankan population, the leading risk factor was high fasting plasma glucose, while high BMI and dietary risk (consumption of an unhealthy diet) were the third and fourth important risk factors (Figure 5).

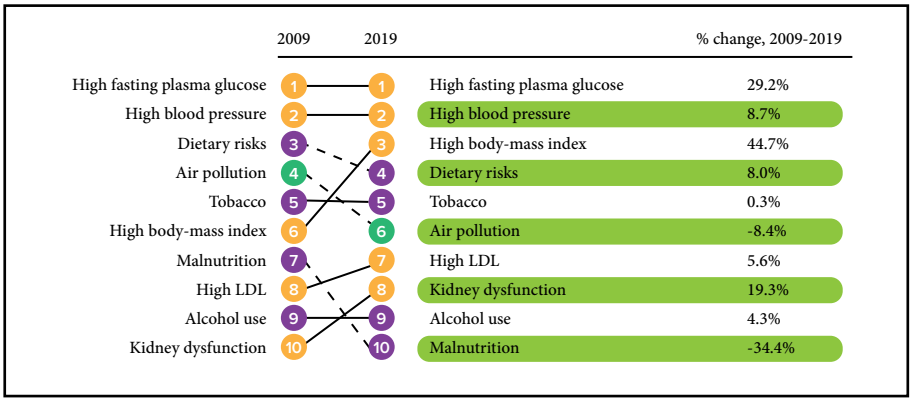


Figure 5–Sri Lanka :Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009–2019, all ages combined. (Global Burden of Disease study 2019)

Considering the status of consuming an unhealthy diet, the STEPs survey in 2021 had highlighted that 68.1% of males and 67.6% of females consume less than 5 servings of fruit and/or vegetables on average per day (Sri Lanka STEPS survey, 2021). In addition, approximately 8.7% of adults always or often consumed processed foods high in salt.

Chapter 4

Choosing Healthy Food Options

Towards enhancing the capacity of consumers to select healthy food, Ministry of Health has taken several initiatives to regulate the food industry. Accordingly, several regulations were introduced to food manufacturers to promote the display of the nutrient composition of their food products. While few regulations have already been enacted and enforced, several more are in the process of development. The main aim of these regulations is to reduce the availability of sugar, salt and fat content in the food products available in the market.

An important non-regulatory measure towards helping people choose healthy food, is the Food Based Dietary Guidelines for Sri Lankans.

The Food Act of 1980 was amended in 2016 to include the "Food (Colour Coding for Sugar levels) Regulations 2016" which became enforced from 01st of August 2016 (Annex I). This regulation introduced the concept of colour coding for sugar sweetened beverages, to easily indicate the sugar content in the product. There are three main colours, namely red, amber and green, which indicate high sugar, moderate sugar and low sugar content of the products, with representative concentrations per 100ml of beverage (Figure 6).

Figure 6 - Colour Code System for Beverages and their corresponding Sugar Concentrations

This was followed by a second amendment to the Food Act of 1980, in 2019 with the inclusion of the "Food (Colour Coding for Sugar, Salt and Fat) Regulations 2019", which became implemented from 1st of June 2019 (Annex II), and later fully enforced from 1st of January 2021. This regulation mandates the food manufacturers to display the levels of salt, sugar and fat, in the packeted solid and semi-solid food items which they produce or distribute. It is also a colour code which should be displayed in the front of the pack as a "Front of Pack Label" (FOPL) and is mandatory for most of the

food items in the market. Accordingly, there are three colours for coding, namely red, amber and green, to indicate the high, medium and low concentration of salt, sugar and fat content (Figure 7).

Figure 7 - Front of Pack Label for Sugar, Salt and Fat

Each ingredient has a separate concentration for the colour code classification (Table 1).

Table 1 – Sugar, Salt and Fat Concentrations Depicted by Front of Pack Labels

Sugar levels for solid & semi-solid foods (per 100g)	Salt levels for solid & semi-solid foods (per 100g)	Total fat levels for solid & semi-solid foods (per 100g)
>22g	>1.25g	>17.5g
5-22g	0.25-1.25g	3-17.5g
<5g	<0.25g	<3g

This simple colour coding has been introduced by the Directorate of Food Safety, Environmental and Occupational Health, along with the Directorate of Non-communicable Diseases for the easy classification and understanding by the public, in choosing the healthy food items. The interpretations indicate what food items should be reduced in consumption based on the FoPL (Table 2).

Table 2 - Interpretation of FoPL Colour Codes

Condition of the front pack labeling (Traffic light System) ආහාර ඇසුරුමේ ඉදිරිපස ඇති වර්ණ කේතය (රථ වාහන වර්ණ සංඥා) பொதியின் முன் பக்க லேபலின் நிலை (போக்குவரத்து விளக்கு அமைப்பு)	Interpretation සරල අර්ථ දැක්වීම விளக்கம்
Food Items " with at least one Red Logo" **රතු ලාංඡන එකක් හෝ වැඩි ගණනක් ඇති ආහාර** குறைந்தது ஒரு சிவப்பு சின்னத்துடன்" உணவுப் பொருட்கள்	High risk for the NCD such as heart diseases, diabetes and hypertension" Therefore, limit consumption of such food items as much as possible **හෘද රෝග, දියවැඩියාව, අධි රුධිර පීඩනය, වැනි බෝ නොවන රෝග සඳහා අධි අවදානමක් ඇත, එම නිසා එවැනි ආහාර භාවිතය හැකිතාක් සීමා කරන්න** "இதய நோய்கள், நீரிழிவு மற்றும் உயர் இரத்த அழுத்தம் போன்ற தொற்றா நோய்களிற்கான அதிக ஆபத்து" எனவே முடிந்தவரை இதுபோன்ற உணவுப் பொருட்களை உட்கொள்வதைக் கட்டுப்படுத்துங்கள்
Food Items "**without Red Logo/s, but at least with one Amber logo**" **රතු ලාංඡන නැති, එහෙත් කහ ලාංඡන එකක් හෝ වැඩි ගණනක් ඇති ආහාර.** சிவப்பு சின்னம்.'.சின்னங்கள் இல்லாமல், ஆனால் குறைந்தபட்சம் ஒரு செம்மஞ்சள் சின்னத்துடன்" உணவுப் பொருட்கள்	"Risk for the NCD such as heart disease, diabetes & hypertension" Therefore, reduce consumption of such foods. **හෘද රෝග, දියවැඩියාව, අධි රුධිර පීඩනය, වැනි බෝ නොවන රෝග සඳහා අවදානමක් ඇත, එම නිසා එවැනි ආහාර භාවිතය අවම කරන්න** "இதய நோய்கள், நீரிழிவு மற்றும் உயர் இரத்த அழுத்தம் போன்ற தொற்றா நோய்களிற்கான அதிக ஆபத்து" எனவே முடிந்தவரை இதுபோன்ற உணவுப் பொருட்களை உட்கொள்வதைக் கட்டுப்படுத்துங்கள்

Chapter 5

Common Myths and Misconceptions of a Healthy Diet

Numerous myths are circulating among the public, in relation to nutrition at different stages of life. Addressing and correcting such wrong perceptions is an important factor towards the promotion of a healthy diet in the community. These myths can be an important factor which affect the choices of the people. Some common myths are as follows:

Table 3 - Common Myths and Misconceptions of a Healthy Diet

Common Myths and Misconceptions	Scientific explanation
1. Eggs increase blood cholesterol level and people with NCDs should avoid eggs.	Egg yolk contains cholesterol which fulfil only the 50% of the recommended daily cholesterol level. Hence, consuming eggs moderately (i.e. consuming one egg per day) alone will not affect blood cholesterol level, unless specifically advised to avoid eggs by the physician.
2. Full cream milk is more nutritious than low-fat milk.	Both types of milk contain the same important nutrients, but low-fat milk has less fat and therefore, lesser calories.
3. Milk is an essential food item and can even replace a meal	For adults and older children, milk is only part of meal, and the added nutritional value gained from milk is protein and calcium, which can be obtained from other food also. Milk should never be used to replace a meal, as the nutrient availability in a meal is much greater than in milk.
4. Oil can be re-used several times in cooking	Except coconut oil, none of other types of oils are recommended for reuse (including palm oil, sunflower oil etc). Even coconut oil is not recommended for re-use more than two times, as all these oils can produce harmful toxic materials including trans-fats, when heated or boiled several times. These can promote the development of NCDs.

5. Oils that are having white colour particles in the bottles are not suitable for use	If the room temperature is lower (Eg: air-conditioned environments) or if refrigerated, certain oils can have white particles in the container. That is normal for many oil types including coconut oil, palm oil etc. These particles will disappear when room temperature rises and when oil is kept outside in the room temperature.
6. Plant oils contain cholesterol	Plant oils do not contain cholesterol. It is produced in animal bodies and therefore plant oils do not contain cholesterol.

Chapter 6

Healthy Diet Promotion Programme

The aim of the "Healthy Diet Promotion" programme is to build the capacity of the Medical Officers and Nursing Officers in the HLCs at primary healthcare level hospitals, to promote a healthy diet among the people who seek care at the Healthy Lifestyle Centers. It will enable HLC staff to advise their clients on consuming a healthy diet, following a brief assessment of their health and nutritional status, which would ultimately result in reducing the prevalence of NCDs in the local community.

The **main objective** of this guideline is:

"To develop the capacity of the primary healthcare officers to enhance community awareness and activities, towards the consumption of a healthy diet, which will result in the reduced incidence non communicable diseases."

The **specific objectives** of this brief health intervention are mainly to

1. Promote a balanced diet with correct proportion of different nutritional components
2. Reduce the intake of unhealthy foods with high salt, sugar and fat.

Identification of the dietary patterns of each client is the most important activity. Obtaining a proper dietary history in relation to the food consumption pattern is the first step prior to planning an intervention.

Furthermore, this will be to promote the intake of suitable and affordable food options for individuals, including the locally available vegetables, green leaves and fruits. This could also be considered as an intervention on persons who are found to have a poor intake of these above-mentioned food categories.

Chapter 7

Training Programme

- This training package consists of 2 parts;
  - o Slide presentations for use by the trainers
  - o Guideline book for trainers

Requirements for the session:

Setting	:	A suitable meeting facility at district level
Number of participants	:	Limit one training session to a maximum of 30 participants
Duration of the training	:	One full day training session
Logistics	:	Computer/Laptop Projector and screen to put up the presentation Flip charts or a white board White board markers and eraser Chairs, pens and papers for the activities

Scope of discussion:

1. Common dietary problems related to NCDs in the community and related burden
2. Identification of NCD related dietary problems among clients
3. Planning and delivering brief interventions to promote a healthy diet
4. Indications and pathways for referral of clients requiring specialized management
5. Food items recommended in a country's economic downturn

Learning outcomes.

At the end of the training, the participants are expected to gain the following competencies,

1. Various aspects of a healthy diet and how diet relates to NCDs
2. Identifying and assessing clients for a brief dietary intervention related to NCDs
3. Arrange follow up care and/or a referral of clients as and when indicated
4. Promote healthy diet among the community, towards reducing the NCD burden.
5. Address basic issues encountered by the clients/community which are related to the diet and NCD control.
6. Deliver personalized dietary interventions with appropriate instructions
7. Promote food items and healthy food recipes which are recommended in an economic crisis situation in the country.

Proposed Agenda

8.30 a.m.	-	Welcome speech and explaining the objectives
8.45 a.m.	-	Introduction to the programme
9. 00 a.m.	-	Pre-test assessment
9.15 a.m.	-	Morning Tea
9.30 a.m.	-	Presentation on Healthy Diet and NCD burden – Session 01
11.00 a.m.	-	Essentials in the diet and what should be limited
11.45 a.m.	-	Q & A session
12.00 noon	-	Lunch
12.45 p.m.	-	Promotion of a Healthy Diet – Session 02
1.45 p.m.	-	Practical sessions in assessing a client and providing dietary interventions based on case scenarios (4 Case Scenarios to be discussed in groups)
3.15 p.m.	-	Promotion of a Healthy Diet – Session 03
3.45 p.m.	-	Post-test assessment and evaluation
4.15 p.m.	-	End of session followed by afternoon tea

This agenda could be modified according to the available time, resources, and the mode of conducting the training programme at the regional level. Essential components could be included according to the availability of local resources. i.e., medical officers specializing in nutrition, who can contribute to conducting practical sessions and knowledge sharing.

Table 4 - Curriculum blueprint

Outcome /skill/ competencies	Content	Teaching/ learning method	Time duration	Method of assessment
1. Unhealthy Diet and NCDs	• Unhealthy Diet and NCDs • NCD burden in Sri Lanka • Importance of Nutrition through-out the lifecycle • Low Birth Weight and NCDs • Body Mass Index • Childhood Obesity and Adult Obesity	Ask the audience about their perspective on an Unhealthy Diet. Explain the Unhealthy Diet and NCD burden in Sri Lanka	One and a half hour	Pre-post assessment
2. Healthy diet	• Classification of foods • Importance of a healthy diet • Natural Flavour Enhancers • Healthy Fluids • Nutrients in a Healthy Diet • Healthy food plates in normal adult/ obese person/ diabetic patient	Ask the audience about the different classifications of foods. Explain it by PowerPoint presentation by showing pictures		
3. What are the important dietary risk factors for NCDs?	• Low sugar diet • Low salt diet • Low-fat diet and trans-fats	Lecture discussion		

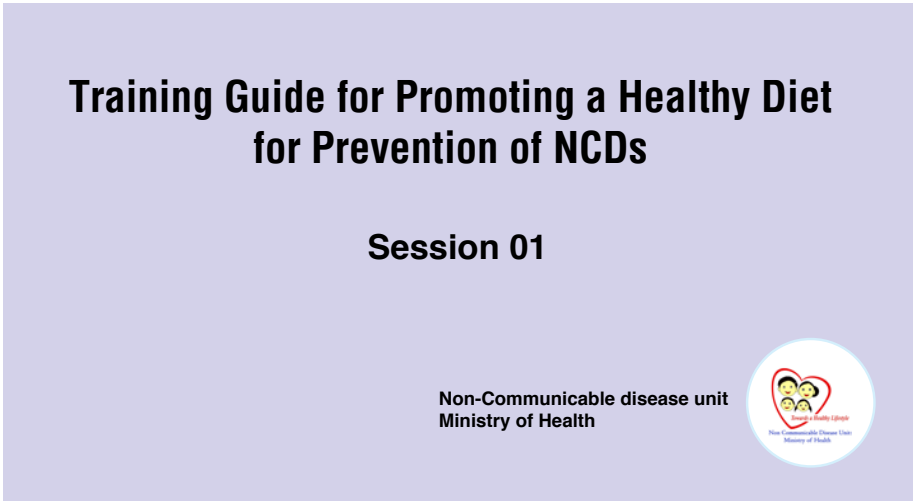
4. Identifying and assessing eligible clients for a dietary intervention	• Obtain a general history • Perform a 24-hour dietary recall and/ or food frequency survey • Conduct relevant general examination and nutrition specific physical examination, including blood pressure readings. • Review any available investigations and health records. • How to provide appropriate dietary advice and identification of patients who needs referrals ,	Lecture discussion Ask two participants to perform a role play on a 24-hour dietary recall	One hour	
5. Basic issues encountered in the community, which are related to the diet and NCD control	• Economic burden due to unhealthy food habits	Lecture discussion		
6. Strategies for promoting Healthy Diet in the community, for NCD prevention	• Availability of healthy food • Affordability of healthy food • Socio-cultural factors in food consumption • Selection of healthy food • Healthy preparation of food • Healthy consumption of food	Discussion		

7. Healthy food access initiatives	• Healthy meal preparation workshop • Smart shopping	Explain these activities to the participants that can be carried out for the groups of clients who are being followed up at the HLCs		
8. Physical activity	• Types of physical activity for different age groups	Lecture discussion		
9. Personalized dietary intervention with appropriate instructions	Personalized dietary intervention with appropriate instructions for following case scenario: • Person with a sedentary lifestyle • Person with obesity • Person with Diabetes Mellitus • Person with High Blood pressure	Case based discussion Participants should be divided into four groups. A case scenario should be given to each group to discuss the personalized dietary intervention with appropriate instructions (advise and diet plan) Preparation - 30 minutes. Presentation -10 minutes. Discussion- 5-minute (refer to chapter 12 for answers)	One and a half hour	Assessment of each case-based intervention – whether the appropriate instructions were identified for those case scenario
10. Impact of the financial and economic recession on nutrition	Food items recommended for the country's economic recession	Lecture- discussion	Half an hour	

Chapter 8

Presentation Guideline – Session 01

Slide 01 :



This is a detailed description of the contents of the PowerPoint presentation which is expected to be used during the first session of the training of staff on promoting a healthy diet towards NCD prevention. The presentation consists of 35 content slides, and contains sections related to healthy diet and NCDs, initial assessment and referral of clients for diet related specialized management.

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Slide 02 :

Non-Communicable Diseases (NCD)

- Non communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors (WHO 2021).

Main types of NCDs :

- Cardiovascular diseases (Heart diseases and Stroke)
- Cancer
- Diabetes
- Chronic respiratory diseases (COPD and Asthma)
- Chronic kidney disease and renal failure

What are Non Communicable Diseases (NCDs) ?

They are chronic diseases, which are of long duration or life long, and developed as a result of a combination of genetic, environmental and behavioural factors. Among the numerous chronic NCDs, there are a few which are having a high prevalence of disease and / or complications, and these are considered more important than the less prevalent ones. Cardiovascular diseases, which include ischaemic heart diseases, Hypertensive heart diseases and coronary artery diseases are the most important, since they record the highest mortality from NCDs. Cerebrovascular diseases , also known as stroke, are another important NCD, with a high mortality rate. Metabolic syndrome, led by diabetes and its numerous multi organ complications.

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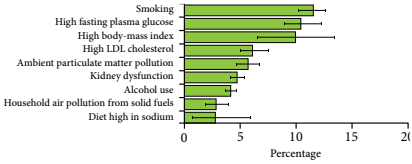
Slide 03 :

Risk factors for NCD

5 Main Modifiable Risk Factors :

- Unhealthy diet
- Physical inactivity
- Tobacco use
- Alcohol consumption
- Air Pollution

High Blood Pressure is a NCD as well as a risk factor for other NCDs.



Risk factors for NCDs include modifiable risk factors and non-modifiable risk factors.

Non-Modifiable	Modifiable/Lifestyle factors
Age	Unhealthy diet
Gender	Physical inactivity
Race	Tobacco
Family history (genetics)	Alcohol

In the global context, as per the global burden of disease 2019 study, the leading risk factor for NCD had been high systolic blood pressure, smoking, high fasting plasma glucose level and high body mass index. Three of these topmost risk factors are associated with an unhealthy diet.

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Slide 04 :

Unhealthy diet and NCDs

Unhealthy diet can lead to :

- Overweight and Obesity
- Undernutrition, body weakness and reduced immunity
- High salt in diet can lead to high blood pressure
  - High blood pressure leads to Chronic Hypertension, Coronary Heart disease, Vascular Aneurysms, Stroke and Chronic Renal Failure
- High sugar in diet can lead to high blood glucose levels
  - High blood glucose leads to Diabetes, Atherosclerosis and Coronary Heart disease, Stroke and Chronic Renal Failure
- High fats and trans-fats in diet can lead to high levels of blood cholesterol and fatty acids
  - These can lead to Atherosclerosis and Coronary Heart disease, Stroke, Hypertension and some cancers

Unhealthy diet is directly associated with the development of NCDs as well as other intermediate risk factors for NCDs.

Unhealthy diet is the main cause of overweight and obesity. Overweight and obesity are associated with ischaemic heart disease, hyperlipidemia and diabetes. In addition, the main reason for undernutrition is also unhealthy diet, which leads to body weakness, reduced immunity and nutrient deficiencies.

High content of salt, sugar and fat lead to the development of different combinations of diseases, including cardiovascular disease, diabetes and metabolic syndrome.

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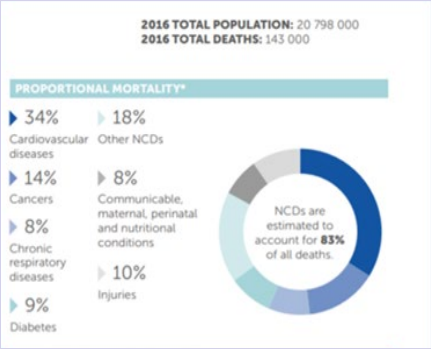
Slide 05 :

Unhealthy Eating Leads to NCD related Deaths

Sri Lanka



Unhealthy eating is one of the risk factors for developing of NCDs.

According to the analysis of deaths in Sri Lanka 2016, it was observed that approximately 83% of all deaths were attributable to NCDs.

Of those, over 34% of deaths had been due to cardiovascular disease, while another 14 had been due to cancers, and 9% due to Diabetes. A significant underlying risk factor for these NCDs is the unhealthy diet.

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Slide 06 :

STEPS Survey Findings of Sri Lanka - 2021

Mean number of days fruit consumed in a typical week	3.5 days
Mean number of days vegetables consumed in a typical week	6.5 days
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	67.8%
Meal intake of salt per day	14.2g
Percentage who always or often eat processed foods high in salt	8.2%

WHO Sri Lanka (2021), WHO STEPS Survey Fact Sheet 2021.

According to the WHO STEPS survey, conducted every five years, using a representative sample of adults aged between 18 to 69 years, throughout the islandwide, overall consumption of vegetables/fruits was low and intake of processed food with excessive salt was high.

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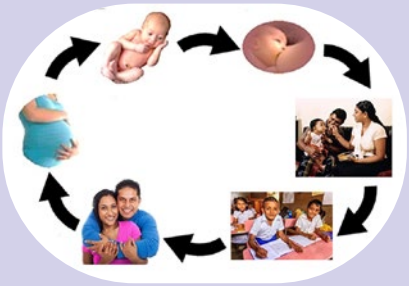
Slide 07 :

Importance of Nutrition throughout the lifecycle



- A healthy diet and nutrition is essential during all phases of life, from the preconception period in pregnancy, to infant, young child, adolescent and young adults, and to the elderly as well.
- In early life, it is important for healthy growth and development, while in adulthood and elderly, it is important for maintaining a good quality of life and increase life span.

When life cycle approach is considered, as an example, if Sri Lanka is to achieve healthy weight for newborn babies of more than 2.5kg, it is a necessity to address the issues related to adolescent or young girl's nutrition, even before they conceive or marriage.

Organogenesis commences during first trimester and if the mother is malnourished at that time or if she has a micronutrient deficiency, it will directly affect the fetal growth and wellbeing.

Even though a baby is born with a good birth weight and is exclusively breastfed for 6 months as recommended, development could be influenced by wrong feeding practices. A close monitoring should be done at the time of complementary feeding. If the quantity and quality of foods are not assessed and no proper growth monitoring is done, there is a tendency to child become chronically malnourished at the age of 2 years.

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Slide 08 :

Low Birth Weight and NCDs

- Low birthweight (LBW) increases the risk of chronic NCDs, such as diabetes and cardiovascular disease, occurring in adulthood, according to studies conducted over the last 40 years.

(World Health Organization. Global Nutrition Targets 2025: Low Birth WeightPolicy Brief. Geneva: World Health Organization (2014).
Available online at: https://apps.who.int/iris/handle/10665/149020)

MINI REVIEW

Low Birthweight as a Risk Factor for Non-communicable Diseases in Adults

Maria Eugenia Bianchi[1*†] and Jaime M. Restrepo[2,3†]

According to studies undertaken over the past 40 years, low birthweight (LBW) is not only a significant predictor of perinatal death and morbidity, but also increases the risk of chronic non-communicable diseases (NCDs) in adulthood. The purpose of this paper is to summarize the research on LBW as a risk factor for NCDs in adults. The Barker hypothesis was based on the finding that adults with an LBW or an unhealthy intrauterine

Bianchi ME and Restrepo JM (2022)Low Birthweight as a Risk Factor for NCD in Adults. Front. Med. 8:793990. doi: 10.3389/fmed.2021.793990

When mother is undernourished, fetus developed under stressful environment. This will permenantly change metabolic activities in foetus resulting in the higher risk of developing NCDs like diabetes, hypertension and certain caners in early adulthood.

Further, maternal malnutrition affects the cognitive functions and immunity of the baby.

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Slide 09 :

Body Mass Index (BMI)

How to calculate Body Mass Index

$$\text{BMI} = \frac{\text{Weight (kg)}}{[\text{Height(m)}]^2}$$

World Health Organization (2022). Body mass index - BMI. [online] www.euro.who.int. Available at: https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi.

Body mass index is used to assess underweight, overweight and obesity. It is a very simple measure, which only required a weighing scale and a stadiometer. Using the weighing scale take the body weight in Kilograms (Kg). Ensure to remove all the excess items that the person is carrying and remove shoes as well.

Next take the height measurement in centimeters and convert it in to meters dividing by 100. Thereafter, calculate the squared value of the height.

Using the above equation, the BMI value can be obtained.

Classification	BMI
Underweight	Less than 18.5 kgm^2
Normal weight	18.5 kgm^2 to 24.9 kgm^2
Overweight	25 kgm^2 to 29.9 kgm^2
Obesity	30 kgm^2 and above

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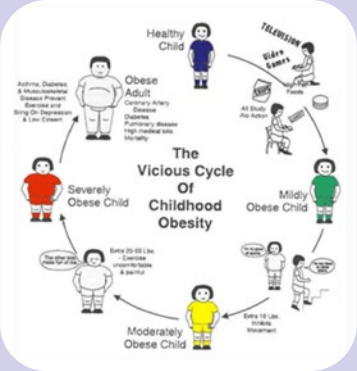
Slide 10 :

Childhood Obesity



- In 2016, the global prevalence of childhood obesity was 7.8% in boys and 5.6% in girls.
- National prevalence of overweight /obesity in adolescence is 4.6% , whereas it is more than 20% among School Children in urban areas (FHB 2021).
- A recent survey among 5–18 year-olds in urban Sri Lanka showed an obesity prevalence of 10.3% and overweight prevalence of 11.3%.

Wickramasinghe VP, Katulanda P, Seneviratne SN, Wijewickrama ES, Katulanda G, de Silva PHIU. Prevalence of obesity related metabolic abnormalities among 5-18-year-old children: Preliminary data from the Western Province of Sri Lanka. In. 22nd Annual Scientific Congress of Sri Lanka College of Pediatricians. Colombo: Sri Lanka College of Pediatricians; 2019. p. 81–2.

When mother is undernourished, fetus developed under stressful environment. This will permenantly change metabolic activities in foetus resulting in the higher risk of developing NCDs like diabetes, hypertension and certain caners in early adulthood.

Further, maternal malnutrition affects the cognitive functions and immunity of the baby.

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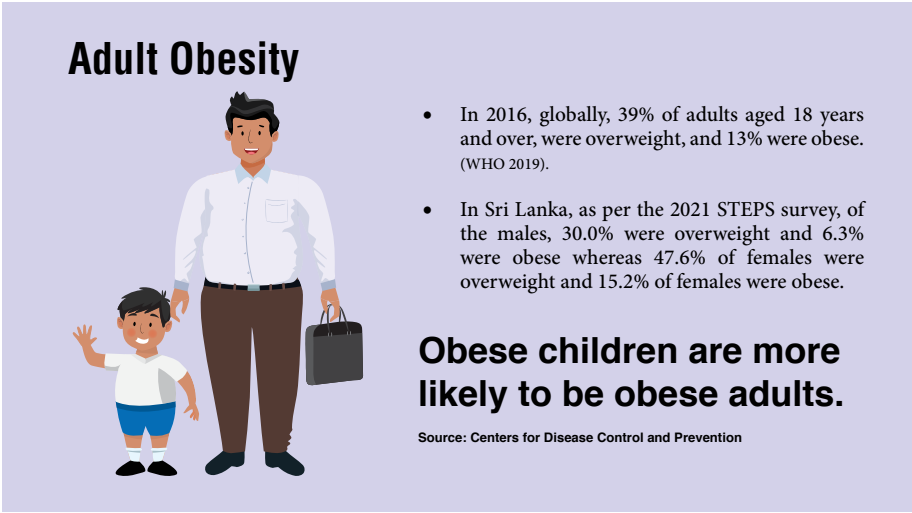
Slide 11 :



Unhealthy food habits and sedentary lifestyle among children and adults lead to overweight and obesity.

If not change unhealthy food habits and physical inactivity, childhood obesity continues to adulthood and leads to the development of NCDs

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Slide 12 :

Healthy Diet

A diet which is :

- Health promoting
- Disease preventing
- Provides adequately the require nutrients
- Provides health promoting substances
- Avoid health harming substances
- Does not give excess/reduced amounts
- Simply, a diet which contains at least most of the required nutrients in adequate quantity and quality.

*Neufeld, L., Hendriks, S., & Hugas, M. (2021). Healthy Diet : A definition for the UN food systems summit 2021. https://sc-fss2021.org/wp-content/uploads/2021/04/Healthy_Diet.pdf

This slide is to describe what a healthy diet is, and the criteria for a diet to be called a healthy diet (Neufeld, Hendriks & Hugas, 2021) are as follows.

- It should be a health promoting diet
- It should include the ability to prevent disease and ill health
- It should provide most of the essential nutrients in adequate amounts
- It should provide health promoting substances in adequate amounts
- It should be free of substances harmful to the body
- It should be in adequate quantity and not in excess or in deficient amounts.

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Slide 13 :

Unhealthy Diet

- Unhealthy diet is a one which does not comply with the definition of a "healthy diet".
- Unhealthy diet can be
  - Foods high in salt
  - Food and beverages high in sugar
  - Foods high in fat and trans-fats
  - Foods which contain toxic or harmful additives
  - Ultra processed foods

Unhealthy diet is a diet which contains components and substances which are harmful to the human body. Substances such as,

- High salt content
- High sugar content in food and in beverages
- High fat and trans-fat content
- Foods contaminated with toxins and harmful substances
- Ultra processed foods

In addition, other factors such as adulterated foods, unhygienic food, and lack of essential nutrients in the diet can also be considered as being unhealthy.

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Slide 14 :

Food and Diet

Food and drinks usually consumed by a person or persons, are commonly termed as "diet".

What is a diet ?

Food and drinks usually consumed by a person or persons are commonly termed as "diet " (Cambridge online dictionary, 2021), and for a healthy life, it is important to consume a healthy diet

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Slide 15 :

Classification of foods

1. Groups of Food
2. Functions of Food
   - 2.1 Energy Giving function
   - 2.2 Body Building function
   - 2.3 Body Protection function
3. Nutrients in Food

Food can be categorized according to the groups, functions as well as nutrients in food.

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Slide 16 :

1. Groups of Food

- Cereals and starch containing-foods
- Vegetables and Green Leaves
- Fruits
- Fish, lean meat, eggs and pulses
- Nuts, oily seeds and oil
- Fresh milk and it's fermented products

Food Group	Examples
Cereals and starch containing foods 	Cereals - e.g. rice, wheat, millet (finger millet-Kurrakkan, proso millet-Meneri, foxtail millet-Thana haal), maize Cereal products - e.g. hoppers, string hoppers, pittu, roti, bread, noodles, chapathi, dosai, idly Yams and tubers - e.g. potato, manioc, sweet potato, country potato-Innala, colocasia - Kiri ala, greater yam-Raja ala and other different yams Jackfruit and breadfruit
Vegetables and Green Leaves 	Vitamin A rich vegetables - e.g. pumpkin, carrot, butternut squash Other vegetables including root vegetables - e.g. beans, long beans (Me karal), snake gourd (Pathola), ridge gourd (Wetakolu), drumstick (Murunga), bitter gourd, brinjal, banana flower, capsicum (Malumiris), wing beans (Dambala), beet, radish, knol-khol, lasia (Kohila ala), lotus roots (Nelum ala)

	Green leaves - e.g. Kathurumurunga, drumstick leaves, Thampala, Saarana, Mukunuwenna, Gotukola, Kankun, beet leaves, radish leaves, pumpkin leaves, Spinach
Fruits 	Banana, mango, papaya, pineapple, watermelon, guava, Jambu, Lovi , Veralu, Uguressa, Anoda, orange, avocado, Beli, wood apple
Fresh milk and it's fermented products 	Fresh milk, curd, yoghurt, cheese
Fish, lean meat, eggs and pulses 	Fish / seafood / dried fish / poultry / lean meat - e.g. All fresh and marine water fish, prawns, cuttle fish, crab, chicken, beef, pork, mutton, sprats, dried fish Egg - e.g. hen/ quail/ duck egg Pulses - e.g. chickpea, cowpea, green gram, black gram, horse gram, soya and lentils
Nuts, oily seeds and oil 	Healthy nuts and oily seeds- e.g. peanuts, cashew, kottang, gingelly, pumpkin seeds Coconuts - consume based on preference in the daily diet/ throughout the week within recommended amounts. e.g. scraped/kernel/coconut milk Oils and fats - consume based on preference in the daily diet/ throughout the week within recommended amounts. e.g. coconut oil, corn oil, gingelly oil, butter, ghee, fat spreads

Slide 17 :

2. Functions of Food

Three main functions of food :

1. Energy Giving function
2. Body building function
3. Body protection function

* In addition, certain foods are flavor enhancers, and certain foods are healthy liquids.

There are three main functions of food.

1. Energy giving function – to generate and provide energy to carry out all metabolic activities of the body.
2. Body building and repairing function - for growth, development and repairing damaged cells and tissues.
3. Body protection function- to coordinate bodily functions and protect the body from infections and cancers.

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Slide 18 :

Energy Giving Function

- Foods whose main function is to provide the body with the necessary energy, required to maintain the metabolic activities.
- Eg : rice, wheat, flour, bakery products, yams, potatoes, corn, certain fruits such as jackfruit, certain fats and oil etc.

Energy is essential for all body functions, such as breathing, circulation, digestion and movements. Carbohydrate is the main source of energy for the body, and certain food types provide more energy than others. The amount of energy required depends on the metabolic rate of the body and the activities which people are engaged in. Some activities such as farming, cultivation, construction and sports require lots of energy while more sedentary activities such as office work, computer-based work consume less energy.

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Slide 19 :

Body Building and Repair Function

Foods which provide the main nutrients and raw materials for the building and regeneration of new cells and worn-out cells, organs and tissues.

Eg : fish, seafoods, meat, eggs, milk products, grains, nuts and pulses, certain vegetables and fruits.

Body building includes the generation of new cells and tissues and as well as repairing damaged or broken cells. Children grow until 20 years of age and for that they need adequate amount protein. During pregnancy, sufficient amount of body building foods are needed for proper organogenesis in growing fetus.

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Slide 20 :

Body Protection Function

- Foods which provide the ingredients for coordinate body functions and protection from disease and cancers. (vitamins, minerals, fibers and functional components)
- Eg : vegetables and fruits, green leaves

Body protection foods help to coordinate bodily function and protection from infections and cancers through vitamins, minerals, fiber and functional components.

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Slide 21 :

Natural Flavour Enhancers

- Some of the foods that we consume, give taste and flavour which makes the other foods more digestible and palatable to consume.
- In addition, these food ingredients also provide important micronutrients, fiber and functional components which adds to the body protection functions.
- Eg : spices, condiments, onions

Some spices and condiments are added to the food to enhance their smell, taste and flavour. However, these contain numerous micronutrients which are also essential for various functions of the body and protection.

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Slide 22 :

Healthy Fluids

- Water and fluids are essential for life.
- About 2/3rd of the body consists of water.
- Adequate water intake is essential since a large volume of water is lost from the body via urine, sweat, perspiration and faeces.
- Healthy liquids are an easily absorbable mode of delivery of nutrients to the body.
- Eg : water, cunjee and natural fruit juices, tea, liquid milk, herbal drinks like Beli, Ranawara etc., without added sugar

Healthy fluids include numerous juices, beverages and liquified foods such as soups and porridge. fruit juices contain all vitamins present in fruits in an easily digestible form, while soups and porridge contain a mixture of nutrients of all the added food items, prepared in a more digestible manner. These are very important components in a healthy diet.

Water and liquids provide the much-needed hydration to the body. They also provide various nutrients in an easily digestible form, which can be readily absorbed, and are of particular importance in the diet of the weak and elderly.

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Slide 23 :

Nutrients in a Healthy Diet

- Carbohydrates
- Proteins
- Lipids
- Vitamins
- Minerals
- Water

There are several important nutrients in food, namely carbohydrates, proteins, lipids, vitamins and minerals. The only source of these nutrients is the diet, and hence, is of utmost importance that all these nutrients are provided in adequate quantities through the diet.

Water is an essential requirement for healthy living, and adults must consume at least 1.5 to 2 liters of water per day, to ensure they are well hydrated.

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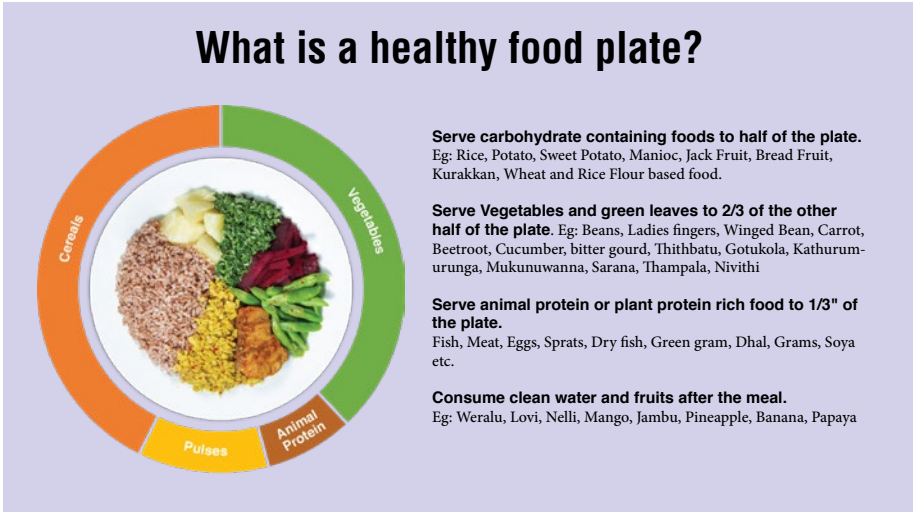
Slide 24 :



There are many food types that can be used for different components of this plate. Those are categorized based on the main functions of food. Water is an essential component which we should consume with food, and throughout the day in divided amounts. For an adult, it is recommended to consume about 1.5 – 2.0 L of water per day.

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Slide 25 :

Diet for Overweight and Obesity

In a diet for weight loss, the starchy content is reduced to ¼ th of the plate.

Vegetable content is increased to half of the plate.

Proteins increased to ¼ th of the plate, which includes both animal proteins and plant proteins.

In the diet to overcome overweight and obesity, starchy foods should be further reduced to ¼th of the plate. Vegetables, salads, leaves should make up half of the plate, while the proteins will be limited to the ¼th of the plate.

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Slide 26 :

Diabetic Food Plate

- The starchy food content is reduced to ¼ th of the plate.
- Vegetable content is increased to half of the plate.
- Proteins increased to ¼ th of the plate, which includes both animal proteins and plant proteins.

** This food plate is similar to the diet plate for individuals with overweight and obesity except for those who are complicated with nephropathy. They might need specialized dietary advice for the protein content of the diet.

In diabetes, one of the main aims is to minimize the intake of carbohydrates. Therefore, this food plate is similar to the diet plate for individuals with overweight and obesity except for those who are complicated with nephropathy. They might need specialized dietary advice to reduce the protein content of the diet.

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Slide 27 :

Important Dietary Risk Factor for NCDs

- Sugar
- Salt
- Fats and trans fat

According to the available scientific evidence, unhealthy diet is the biggest risk factor for non-communicable diseases in the world, s including Sri Lanka. Reducing salt, sugar and fat consumption, and promoting the intake of whole grains, fruits vegetables, and nuts (in recommended amount) will reduce the mortality and morbidity related to NCDs in Sri Lanka.

Similarly, an increase in the consumption of fruits and vegetables, with a reduction in consumption of processed foods, will also lead to a healthy economic growth for the country through the development of the national agriculture sector, and reducing the importation of processed foods.

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Slide 28 :

Sugar

- Over-consumption of sugar is a major contributor to obesity, Diabetes and it's related complications, including cardiovascular diseases.
- Frequent consumption of sugar, including sugar containing foods and beverages, is an important cause of tooth decay and dental caries.
- Sugary drinks are a major source of sugar in the diet, and it's consumption is increasing in most countries, especially amongst children and adolescents.
- One of the main initiatives for promoting reduction in sugar usage in food industry, is through the taxation of sugar sweetened beverages (SSB).
- Sugar-sweetened beverages (SSBs) are beverages containing added caloric sweeteners, such as sucrose, high-fructose or fruit-juice concentrates. These include carbonates, fruit drinks, sports drinks, energy and vitamin water drinks, sweetened iced tea, and lemonade.

Over-consumption of sugar is a major contributor to obesity, diabetes and it's related complications, including cardiovascular diseases. Frequent consumption of sugar, including sugar containing foods and beverages, is an important cause of tooth decay and dental caries.

Sugary drinks are a major source of sugar in the diet, and it's consumption is increasing in most countries, especially amongst children and adolescents.

Free sugars refer to monosaccharides (such as glucose, fructose) and disaccharides (such as sucrose or table sugar) added to foods and drinks by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. A new WHO guideline recommends adults and children to reduce their daily intake of free sugars to less than 10% of their total energy intake. A further reduction to below 5% or roughly 25 grams (6 teaspoons) per day would provide additional health benefits.

One of the main initiatives for promoting reduction in sugar usage in food industry, is through the taxation of sugar sweetened beverages (SSB). Sugar-sweetened beverages (SSBs) are beverages containing added caloric sweeteners, such as sucrose, high-fructose or fruit-juice concentrates. These include carbonates, fruit drinks, sports drinks, energy and vitamin water drinks, sweetened iced tea, lemonade etc.

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Slide 29 :

Salt

- A leading cause for high blood pressure and cardiovascular diseases.
- As per the WHO, Salt intake of less than 5 grams per day for adults helps to reduce high blood pressure and risk of cardiovascular disease, stroke and coronary heart disease. The principle benefit of lowering salt intake is a corresponding reduction in high blood pressure.
- An estimated 2.5 million deaths could be prevented each year if global salt consumption were reduced to the recommended level.
- Sri Lanka has a National Salt Reduction Strategy - 2018 to 2022
- Target - A 30% reduction in mean population intake of salt /sodium by 2025 (reduce intake to less than 5g/day per person)

A leading cause for high blood pressure and cardiovascular diseases is salt. As per the WHO, salt intake less than 5 grams (one leveled teaspoon) per day for adults helps to reduce high blood pressure and risk of cardiovascular disease, stroke and coronary heart disease. The principal benefit of lowering salt intake is a corresponding reduction in high blood pressure.

An estimated 2.5 million deaths could be prevented each year if global salt consumption were reduced to the recommended level. Sri Lanka has a National Salt Reduction Strategy - 2018 to 2022. One of the 9 global voluntary targets for NCD reduction is 30% reduction in mean population intake of salt /sodium by 2025 (reduce intake to less than 5g/day per person).

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Slide 30 :

Fat

- Reducing the amount of total fat intake to less than 30% of total energy intake helps to prevent unhealthy weight gain in the adult population. Also, the risk of developing NCDs.
- Especially saturated fat and trans fat consumption needed to be limited to prevent CVDs.
- WHO recommends to limit trans fat (TFA) intake to less than 1% of total energy requirement – ie. less than 2g of TFA/day for a 2000 Calorie diet.
- Sri Lanka is currently in the process of developing the necessary legislation for elimination of TFA from the commercial food industry.

Reducing the amount of total fat intake to less than 30% of total energy intake helps to prevent unhealthy weight gain and risk of developing NCDs.

Especially saturated fats and trans-fat consumption needed to be limited to prevent CVDs.

WHO recommends to limit trans-fat (TFA) intake to less than 1% of total energy requirement – ie. less than 2g of TFA/day for a 2000 Calorie diet.

Trans fat increases the level of LDL-cholesterol, a well-accepted biomarker for cardiovascular disease risk, and decreases level of HDL-cholesterol, which carry away cholesterol from arteries and transport it to the liver, that secretes it into the bile. Diets high in trans-fat increase heart disease risk by 21% and deaths by 28%.

Sri Lanka is currently in the process of developing the necessary legislation for elimination of TFA from the commercial food industry.

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Slide 31 :

Identifying and assessing eligible clients for a dietary intervention

1. Obtain a dietary and nutrition history
   - 24 Hour diet recall
   - Food frequency survey
2. Anthropometric measurements
   - Height
   - Weight
   - BMI
   - Body fat percentage
3. Biochemical tests and medical data
   - Blood sugar
   - Blood cholesterol
   - Blood Pressure

Identifying and assessing eligible clients for a dietary intervention should be done through

- Obtain a dietary history and anthropometric measurements as well as biochemical assessment.
- Dietary history can be obtained mainly by 24 Hour diet recall and Food frequency survey.
- When it comes to the anthropometric measurements height and weight should be measured to calculate the BMI.
- In addition, body fat percentage calculation can be done using especial IT applications (eg. Mobile app)
- Biochemical testing such as blood sugar and cholesterol levels are used to identify the individuals with diabetes mellitus and hypercholesterolemia in order to introduce necessary dietary interventions.

Furthermore, medical data and blood pressure measurement also help to consider relevant dietary interventions.

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Slide 32 :

Identifying and assessing eligible clients for a dietary intervention

- Obtain a general history including
  - Personal information such as age, employment, financial status, and affordability etc.
  - Current health conditions such as diabetes, heart disease etc., and any long-term medications the person is taking.
  - Personal food habits, food concepts, cultural and religious customs related to food.
- Perform a 24-hour dietary recall and/or food frequency survey
- Conduct relevant general examination and nutrition specific physical examination, including blood pressure readings.
- Review any available investigations and health records.
- Provide appropriate dietary advice or if complicated patient, refer to the hospital nutrition clinic

When identifying and assessing eligible clients for dietary interventions general history including detailed dietary history and general physical examination with specific examination for nutrition deficiencies should be carried out by a qualified Medical Officer at HLCs.

General history should be included following information;

- Personal information such as age, employment, financial status, and affordability etc.
- Current health conditions such as diabetes, heart disease etc., and any long-term medications the person is taking.
- Personal food habits, food concepts, cultural and religious customs related to food.

The 24-hour dietary recall and/or food frequency survey is needed to be conducted to obtain quantitative information on individual's diet.

Then relevant general examination and nutrition specific physical examination, including BMI calculation and blood pressure measurement should be performed.

In addition, need to review any available investigations and health records.

Appropriate dietary advice could be provided to uncomplicated patients whereas complicated patients should bereferred to the hospital nutrition clinic.

Slide 33 :

Follow up care and/or a referral of clients as and when indicated

At present, people aged 35 years and above who are apparently healthy and people in the age group of 20-34 years but having the risk factors are eligible to receive Personal Medical Records (PMRs) at the registration/screening for NCDs at the HLCs, medical clinics at the Primary Health Care (PHC) level and health corners at workplaces.

PMRs H1236 A and H1236 B are used for male and female participants respectively to enter the information with regards to history, risk factor assessment, examinations, investigations, referrals, and follow-up.

Follow up care and /or referral of clients who need nutrition intervention to the nutrition clinic could be carried out using the PMRs.

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Slide 34 :

Need for Planned Meals

- Need to plan our meals
- Limit unnecessary intake of
  - Foods with high salt
  - Foods with high sugar
  - Foods with high fats including trans fats
- To minimize the risk of developing
  - high BMI
  - dyslipidemia
  - high blood pressure
  - thereby prevent NCDs : such as CVD, Strokes, Cancers, DM

An unhealthy diet, high BMI, dyslipidemia and high blood pressure increase the risk for NCDs, leading to cardiovascular diseases, stroke, cancers and diabetes. Well controlled consumption of healthy food, coupled with adequate physical activity, will assist the person to be protected from NCDs.

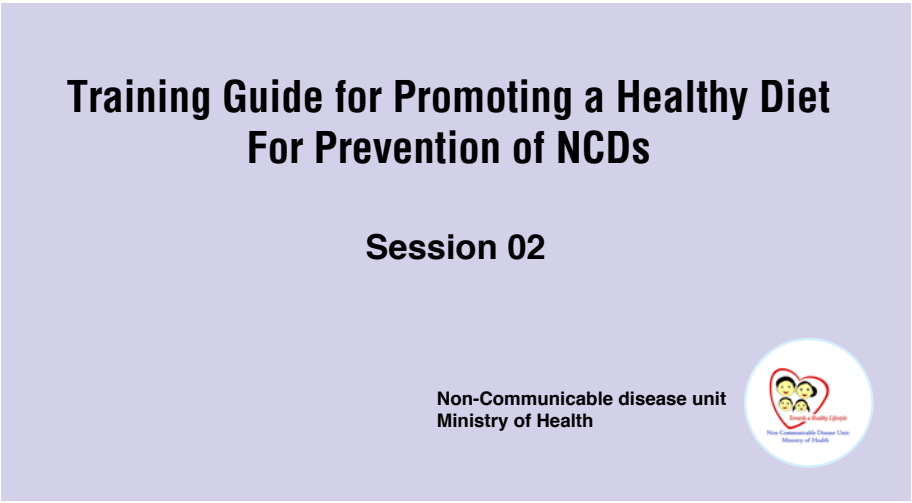
Slide 35 :

End of Session 1

Chapter 8

Presentation Guideline – Session 02

Slide 01 :



This PowerPoint presentation is expected to be used during the second session of the training of staff on promoting a healthy diet towards NCD prevention. This presentation consists of 42 content slides, and contains sections related to strategies for promoting Healthy Diet in the community, towards NCD prevention. At the end of this session case base discussions on dietary interventions are expected to be presented by the participants.

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Slide 02 :

Basic issues encountered in the community, which are related to the diet and NCD control

- Lack of knowledge on the importance of a healthy diet
- Lack of availability and affordability of healthy food
- Lack of awareness on making healthy food choices
- Poor food preparation techniques
- Unhealthy food consumption habits
- Common Myths and Misconceptions related to diet

Unhealthy diets and the resulting malnutrition are major drivers of non communicable diseases (NCDs) around the world. Basic issues encountered in the community, which are related to the diet and NCD control are as follows;

- Lack of knowledge on the importance of a healthy diet
- Lack of availability and affordability of healthy food
- Lack of awareness on making healthy food choices
- Poor food preparation techniques
- Unhealthy food consumption habits
- Common Myths and Misconceptions related to diet

In addition, busy lifestyles and the promotion of an unhealthy foods by advertising contributed to the consumption of unhealthy diets.

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Slide 03 :

Economic burden due to unhealthy food habits

- Although not properly calculated for Sri Lanka except for a few sample studies, it is assumed that the health burden due to diet has a great impact on countries.
- Further, loss of productivity of the workable population is highly affecting the economies producing a huge indirect economic burden.
- Considering all above factors, overall burden on the health system as well as on the national economy is expected as higher.

Reducing the burden of NCDs will lead to a positive impact on the economy of the country, through different means including by reducing the cost of long-term treatment and care, as well as increasing the workforce efficiency. Further it will significantly reduce the healthcare expenditure in the country, as the prevalence of NCD related complications will also be reduced.

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Slide 04 :

Impact of major diet-related chronic disease in Sri Lanka*

Indicator	Impact
Number of deaths annually	19,847 (18.3% of all deaths) [Prediction for year 2025- Number of adult deaths annually 38,477 (20.9% of all deaths)]
Annual hospital costs	$12.6 m (16.7% of hospital costs; 0.1% of GDP)
Productivity losses due to premature death	$29 m (0.2% of GDP)
Total financial cost	$ 41.6 m (0.3% of GDP)

*Case Study for Sri Lanka. Food and Nutrition Bulletin. 2001;22(4_suppl2):42-46. doi:10.1177/15648265010224S211

Several indicators are identified to measure the impact of major diet-related NCDs in Sri Lanka. Annual death percentage, Annual hospital cost, Productivity losses due to premature deaths and total financial cost are some of the indicators.

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Slide 05 :

Strategies for promoting Healthy Diet in the community, towards NCD prevention

- Consumption of a healthy diet depends on,
  - Availability of healthy food
  - Affordability of healthy food
  - Socio cultural factors in food consumption
  - Selection of healthy food
  - Healthy preparation of food
  - Healthy consumption of food
- National level strategies to promote nutrition is elaborated in the National Nutrition Policy of Sri Lanka*

*National Nutrition Policy, Nutrition Division, Ministry of Health, Sri Lanka

When promoting the community towards having a healthy diet, there are two main factors which need to be considered. The food security, which encompasses the availability and affordability of food, for the consumers. Food security needs to be ensured prior to any further diet promotion, as the availability and affordability are the two main factors which decide if consumers would go for the healthy food.
Food security and nutrition security both should be established to ensure the healthy diet. Nutrition security is ensuring people choose healthy food, prepared in a healthy manner, and consumed in a hygienic method

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Slide 06 :

Availability of Healthy Food

- Most areas of Sri Lanka have a variety of healthy vegetables and fruits available in adequate quantities for sale.
- Rice as the staple diet, is available in all shops, with different types of rice varieties being available in most areas.
- Fresh local vegetables as well as vegetables grown in specific areas such as upcountry or low country, are almost equally distributed through out the country, due to the extensive distribution networks.

Availability of healthy food is an important factor to be considered when promoting a healthy diet in the community. At least several varieties of healthy food, vegetables and fruits should be available in the market to be purchased. However, in the modern day, the market shelves are full of unhealthy, processed foods, which are being actively promoted as well, using numerous advertising media.

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Slide 07 :

Availability of Healthy Food

- Most rural and suburban gardens have numerous leafy vegetables and yams grown, and have fruits such as jackfruit, breadfruit etc.
- Promote home gardening of some basic vegetables, fruits and green leaves.
- Home grown vegetables and fruits are easily available and are free of harmful chemicals as well.
- Balcony gardening is a good option for persons living in apartments and annexes

In addition to the availability of healthy food in the market, people should be promoted to maintain home gardens and plant at least some of the common vegetables, fruits and leaves. Balcony gardening is also becoming a popular method of home gardening, for persons living in restricted spaces.

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Slide 08 :

Availability of Healthy Food

- Some vegetable plants such as dambala, karawila, brinjals, tomatoes can be easily grown in home gardens with minimal care. Chilies, ginger, lime, gotukola, and some other types of green leaves can also be grown in home gardens, in addition to fruits such as local orange, mangoes, papaw, bananas etc.
- Although readily available, bakery products and fast foods are unhealthy, and promote development of NCDs.
- Advocate for a healthy food corner in supermarkets and shops

There are diverse crops ranging from local tuber crops, herbs, vegetables and leafy vegetables can be easily grown in home gardens. However, with increase in population size and urbanization, land available for a home garden is progressively diminishing around the urban areas in Sri Lanka. Hence, special racks and aerial planting systems could be used to make maximum use of the space available.
Nevertheless, healthy food corners in supermarkets and shops should be advocated to mitigate the impact of readily available bakery products and fast foods.

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Slide 09 :

Affordability of Food

- There is a wide variation in the food prices in the market.
- Some types of vegetables and fruits are quite expensive, while most of the common low country vegetables are less expensive.
- Also, food prices vary depending on the type of store as well, with higher prices in supermarkets while relatively lower prices in the village fairs.
- Prices of processed foods are sometimes cheaper than natural foods, and meat is sometimes cheaper than fish.

Affordability is a key component of food security. Whenever safe and nutritious food is not available at a price affordable to all, the health of the people is threatened. Processed food also tends to be cheaper, as it can be produced with lower costs. Research has found that healthier foods are three times more expensive than foods that are high in salt, sugar and fat, which are mostly highly processed foods.

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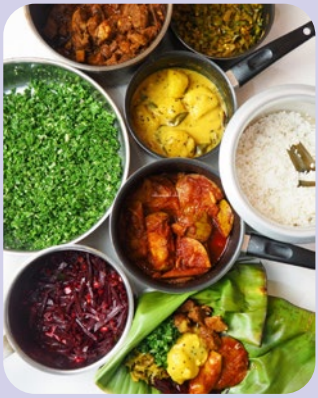
Slide 10 :

Affordability of Food

- Promote home gardening which will make some vegetables and fruits available free of charge.
- Always attempt to buy natural foods which are cheaper than processed foods.
- Home cooked food is cheaper than food bought from restaurants or food outlets.
- Plain rice and curry is cheaper and healthier than fried rice and special rice preparations.
- Consuming fast foods and bakery products are costly and less healthy.



Price and affordability are key barriers to accessing sufficient, safe, and nutritious food to meet dietary needs and food preferences for an active and healthy life. Several strategies are identified to overcome these barriers by increasing awareness, and empowering people on home gardening, etc.

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Slide 11 :

Socio Cultural Factors in Food Availability

- Consumption of excessive amounts of meats in certain cultures.
- Frequent consumption fried / barbecue meat by new generation youth.
- Sweets and sugary foods are common traditional foods in all religious and cultural events.
- Numerous fast foods and bakery products, as well as cakes and sweets are provided as snacks in meetings and at work

Consumption of healthy food can be impacted by certain socio-cultural practices. Some cultures promote the consumption of a large amount of meat and foods of animal origin, which is not healthy nor balanced, as all nutrients are not included in adequate amounts. Similarly, the current trend among the younger generations is the consumption of fried foods, barbeque foods etc., which have numerous free radicals, which promote carcinogenesis. Especially the numerous types of food prepared and consumed during festival seasons are unhealthy. In addition, especially for the new year, large numbers of deep-fried food types are available such as Kavum, Kokis etc. Also, as a tradition, most of the snacks provided at meetings, discussions, workshops etc., are unhealthy food, usually a few types of fast foods. These socio-cultural practices are adverse in the attempt to promote a healthy diet.

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Slide 12 :

Overcoming socio-cultural factors affecting food

- Interventions to address personal factors of behavioural change such as knowledge and emotions have been shown effective to reduce the consumption of meats in certain cultures. Further, increasing the visibility and variety of vegetarian dishes in food environments decreases meat-eating. Also, educational courses on how to shop and cook vegetarian food are effective in reducing meat consumption.
- Gardening, nutrition, and cooking intervention is a promising approach to improve dietary intake and attenuate weight gain in youth, particularly in those who are overweight.
- Promoting healthy eating habits at workplaces: provide employees with information about healthy eating, and provide healthy snacks/healthy food options for meetings.

Kwasny, T., Dobernig, K. and Riefler, P. (2022). Towards reduced meat consumption: A systematic literature review of intervention effectiveness, 2001–2019. Appetite, 168, p.105739.
Davis, J.N. et al., 2011. La Sprouts: A gardening, nutrition, and cooking intervention for Latino youth improves diet and reduces obesity. Journal of the American Dietetic Association, 111(8), pp.1224–1230.
Robson, S.M., Stough, C.O. & Stark, L.J., 2016. The impact of a pilot cooking intervention for parent-child dyads on the consumption of foods prepared away from home. Appetite, 99, pp.177–184.

There are evidence based interventions that has been identified to overcome socio-cultural factors affecting food. Following interventions are some of those;

- Interventions to address personal factors of behavioural change such as knowledge and emotions have been shown effective to reduce the consumption of meats in certain cultures. Further, increasing the visibility and variety of vegetarian dishes in food environments decreases meat-eating. Also, educational courses on how to shop and cook vegetarian food are effective in reducing meat consumption.
- Gardening, nutrition, and cooking intervention is a promising approach to improve dietary intake and attenuate weight gain in youth, particularly in those who are overweight.
- Promoting healthy eating habits at workplaces: provide employees with information about healthy eating, and provide healthy snacks/healthy food options for meetings.

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Slide 13 :

Choosing of Healthy Foods

- Always better to choose fresh, raw food types than processed food types. Eg : fresh fish better than canned fish, fresh vegetables better than processed vegetables in tins, Fresh chicken better than sausages.
- Rice based foods and fresh fruits are healthy alternatives to fast foods and bakery products, which are high in salt and fats.
- Fruits are healthy alternatives for unhealthy desserts and sweets.
- You have the option to choose healthy foods for your consumption, and it is your responsibility.
- Improve community awareness and capacity on choosing healthy food options, and about using the information in Food Labels.

Choosing the healthy foods is an important factor about which the consumers should be aware of. However much healthy food is available and affordable in the market, if the consumers are unaware as to how to choose the healthy food from among the unhealthy foods, the ultimate result would be that there will be a high consumption of unhealthy foods. Therefore, it is very important to empower the consumers on how to choose healthy food.

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Slide 14 :

Choosing of Healthy Foods

- Ensure adherence by restaurant owners and canteen owners, to the guidelines issued by the government to the school canteens and workplace canteens.
- Food manufacturers should adhere to the regulations issued to ensure the safety of food prepared, and to enable consumers to buy safe and healthy food.
- Shop owners must assist consumers to select healthy food options by making healthy food available in adequate quantities in their local shops.

Creating awareness of correct nutritional practices and making such foods available, ensuring the safety of food and providing food at a reasonable price are expected from school canteens through the guideline on school canteen.

The sales of unhealthy foods at work place canteens in state and private sector have become a major contributory factor for this existing situation of NCDs in Sri Lanka. In view of this situation, Ministry of Health had issued guidelines for canteens in the Government Ministries, Departments, Corporations & other institutions to ensure operation of healthy canteens.

Food Act controls, Manufacture, Importation, Sale, Distribution, Transportation, Advertisement and Labeling of food in Sri Lanka. Food manufacturers should adhere to the food act to ensure the safety of food prepared, and to enable consumers to buy safe and healthy food.

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Slide 15 :

A) Colour code system for Sugar Sweetened Beverages (SSB)

Traffic light colour coding has been introduced to the beverages to mention the amounts of sugar contained. Different colours indicate different values for the sugar content in 100ml of liquid, as stated in the table.

Red	Amber	Green
Sugar Liquids (per 100ml)	Sugar Liquids (per 100ml)	Sugar Liquids (per 100ml)
>11g	2-11g	<2g

Ministry of Health has introduced a colour code system similar to the traffic lights on the roads. This colour code is displayed in the package of the foods you purchase, and is termed the Front of pack label.

There is a difference in the front of pack label between liquids and solid / semisolid foods. For liquids which are essentially the sugar sweetened beverages, there is only one colour circle indicating the sugar content in the drink, which is either green, amber or red.

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Slide 16 :

B) Front of Pack Labelling (FoPL) in Processed Foods

Levels of sugar, salt and fat available in the packed semi solid and solid foods are grouped in three colours as depicted above. Displaying the colour code in the front of the pack as a label (FOPL) is mandatory for all the food items in the market since 01.01.2021.

Figure 7 - Front of Pack Label for Sugar, Salt and Fat

Sugar levels for solid & semi-solid foods (per 100g)	Salt levels for solid & semi-solid foods (per 100g)	Total fat levels for solid & semi-solid foods (per 100g)
>22g	>1.25g	>17.5g
5-22g	0.25-1.25g	3-17.5g
<5g	<0.25g	<3g

Breakdown of the color coding for three ingredients in FOPL

The colour code system on the front of the package of semisolid and solid foods, depict the level of sugar, salt and fat in that food product. For each entity, there are three colours namely green, amber and red, to mention the levels of these three ingredients in the foods.

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Slide 17 :

Interpretation for FOPL in color coding

Conditions of the front of pack labelling (Traffic Light System)	Interpretation
Food items "with at least one Red logo"	"High risk for NCD such as heart disease, diabetes and hypertension" Therefore, limit the consumption of such products as much as possible.
Food items "Without Red logo/s, but at least with one Amber logo"	"Risk for the NCD such as heart disease, diabetes and hypertension" Therefore, reduce consumption of such foods.

The interpretation of the front of pack label is very important.
Any item which has a red colour logo, indicates that it has an unacceptably high content of salt, sugar or fat, which is a high risk for developing NCDs. Hence, these food need to be avoided.
Amber colored logo indicates that the content of salt, sugar or fat is high, and needs to minimize the consumption of these food items.

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Slide 18 :

Healthy Food Preparation

- Select a variety of food throughout the week.
- Choose fruits and vegetables of many rainbow colours to add variety.
- Use 1 medium size coconut per day per family of 5 members.
- Limit salt consumption to 5g (01 teaspoon) per day per person.
- Minimize sugar consumption to less than 6 teaspoons per person per day (this includes the sugar contained in sweets and foods as well).

*More information on safe and healthy food preparation is available in the National food Based Dietary guidelines.

Method of food preparation is very important especially in retaining the nutrition value of food. High temperatures, excessive cooking and boiling can destroy the nutrients in food, and this can make the healthy food also unhealthy. Therefore, different types of food should be prepared in different ways without destroying their nutrients. Sometimes, addition of other ingredients can increase or decrease the nutritional value of the food also.

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Slide 19 :

Healthy Food Preparation

- When cooking, do not overheat oil until smoke appears.
- Never reuse the same oil for frying several times.
- Do not overcook or over boil vegetables as it destroys their nutrients.
- As much as possible, try to prepare salads than cooked foods.
- Prepare food with natural culinary ingredients (e.g., herb, spices, lime juice) and avoid food additives as much as possible.

Slide 20 :

Healthy Food Preparation

- It is best to avoid storing cooked food at room temperature for more than two hours as spoilage may begin.
- Do not store cooked food too long even in the refrigerator.
- Pasteurized or sterilized milk once opened, should be refrigerated and used within four days.
- Cans and bottles should be washed thoroughly with soap before opening, as they may be contaminated with rat urine or other contaminants in mass storage facilities

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Slide 21 :

Healthy Food Consumption

- Eating home-cooked meals regularly leads to better health.
- Eat fresh food as much as possible.
- Eat parboiled or less polished rice instead of refined products.
- Eats lots of fresh salads and leafy vegetables, and less starchy foods.
- Consume at least 5 portions of vegetables and fruits per day per person.
- Consume locally available fruits and vegetables as much as possible.
- Lean meat is better than red meats.

In addition :

- Should not skip the main three meals. Take daily at regular intervals.
- Meal time should be free of screens (smart phones, tabs, television)
- Add fresh food options in preference to processed foods
- Replace artificial flavours with natural spices (avoid highly processed food)
- Try to grow fruits and vegetables as much as possible in your garden
- Add three vegetable and two fruit portions per day to your meals consisting of different tastes and colours
- Limit intake of sugar, salt and fat (can use colour code system to select good food options when buying)
- Eat in a slow and mindful manner

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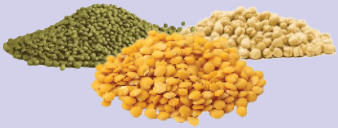
Slide 22 :

Healthy Food Consumption

- Make sure to consume a healthy snack, when necessary Eg.: fresh vegetables or fruits
- Always have fresh fruits in their natural form rather than juices.
- Minimize consumption of bakery products, fast foods, sweets, coloured and flavoured milk, yogurts, yoghurt drinks, and condensed milk.
- Choose whole grains as much as possible
- When using more refined cereals or gains, remember to add more fiber containing food to the same meal (e.g. green leaves, vegetables or other whole grain mixtures)



Slide 23 :

Healthy Food Consumption

- Butter and ghee are high in saturated fat, hence use sparingly.
- Consume a handful of nuts/oily seeds (approximately 30 g) daily.
- Limit consumption of ultra-processed meat (e.g., sausages, meatballs, ham).
- Increase daily water intake to a minimum of 8 – 10 glasses (1.5L-2.0L) per day, depending on your level of physical activity.
- Better to consume low or non-fat fresh milk and its fermented products.
- Avoid cakes, biscuits, short eats, fried snacks (e.g. potato/ manioc chips, bite mixtures) and chocolates that have hidden saturated fat and trans fat as much as possible

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Slide 24 :

Healthy food access initiatives

Healthy food access initiatives promote sustained adoption of healthy eating behaviors

Healthy eating workshops and educational (IEC) materials often develop the knowledge and skills about;

- Principles of good nutrition and healthy diets
- Shopping for healthy food on a budget
- Preparing healthy meals and strengthening cooking skills
- Adapting family and traditional recipes to be more healthful
- Tasting and becoming familiar with new healthy foods including locally or sustainably produced fruits and vegetables
- Recipe concepts that can be prepared with interchangeable ingredients and seasonally adjusted for a variety

Healthy food access is about more than just whether the foods are available in the community. It also has to do with whether households can afford to purchase food (affordability) as well as the knowledge and skills to identify healthy food options.

Hence, healthy food access initiatives are often paired with food and nutrition education to address barriers to healthy eating and promote sustained adoption of healthy eating behaviors. There are numerous nutritional education forms which are healthy eating classes and workshops as well as educational (IEC) materials that can be conducted at HLCs in primary healthcare institutions.

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Slide 25 :

Healthy food access initiatives

- Providing nutrition information and teaching skills in cooking alone, will not guarantee behavior change.
- Educating on healthy eating is more effective when combined with other efforts and interactive activities.
- Below mentioned activities can be carried out for the groups of clients who are being followed up at the HLCs but it will depend on the facilities available at the HLC.

Those education activities for healthy food access initiatives can be carried out for the groups of clients being followed up at the HLCs but it will depend on the facilities available at the HLC.

- Activity 1- Healthy meal preparation workshop
- Activity 2- Smart shopping

Slide 26 :

Healthy meal preparation workshop

This activity equips participants in healthy food access initiatives with skills to prepare healthy meals for themselves and their families.

Activity 1- Healthy meal preparation workshop

The main aim of this activity is to enhance the knowledge and skills of the HLC clients to prepare healthy meals for themselves and their families.

Slide 27 :

Activity 1- Healthy meal preparation workshop

Participants should be divided into groups. The following task will be given to each group.

- Prepare a healthy lunch for a normal well-built adult
- Prepare lunch for an obese individual
  - Some locally available foods should be provided and displayed on a table. Members of each group should discuss and select appropriate food items to prepare lunch according to the case scenario which was given to them.
  - They can prepare the meal and service a lunch plate at the end of the session within one and a half hours.

Ingredients expected to be provided to the workshop:

Locally available foods and seasonal foods can be encouraged

rice/jack fruit/bread food/manioc/ yams

long beans/ wing beans/ladies' fingers/ brinjal/ pumpkins/ bitter gourd

Dhal/ soya/ mushrooms

Eggs/ fish/ meat/ sprats (if available only)

leafy vegetables: Spinach/ Mukunuwenna/ Kankun/ passion fruit leaves etc.

Coconut/ coconut milk

Coconut oil

Necessary spices/ onion / garlic / curry leaves/ rampe

Items:

Plates, spoons, and small pots to cook

A rice cooker or a cooker

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Slide 28 :

1. Prepare a healthy lunch for a normal well-built adult

2. Prepare lunch for an obese individual

At the end of the workshop, two groups should present their food plates as per the instructions given to them. According to the plate they presented, the moderator/ trainer should discuss each plate with the participants regarding its quantity and nutrition quality.

Slide 29 :

Activity 2- Smart shopping

- A grocery store tour/ market tour can be arranged to teach about participants how to shop for healthy foods on a limited budget for those HLC clients.
- This activity can be conducted in collaboration with the range PHI.

Activity 2 - Smart shopping

This activity can be conducted with the assistance of the MOH in your area and the relevant range PHI. Prior to the grocery/ market tour, the necessary permission should be obtained from the relevant shop owners.

Slide 30 :

Activity 2- Smart shopping

During this activity

Educate participants about:

- Reading and understanding food labels
  (the benefits and the way of reading FOPL and BOPL as well as the nutrition content of the selected packeted food items)
- Shopping for seasonal produce
- How a grocery store layout can affect their buying choices
- Unit pricing and shopping in the bulk food section
- Simple and affordable alternatives to common processed foods

Slide 31 :

Activity 3

**Shopping for and cooking with fresh produce can be challenging for families with limited resources

- An interactive activity can be conducted in parallel to the above **activity 2**
- Participants will be asked to select some food items for a given amount of rupees (eg. RS 5000/=). Allow them to select their choices and at the end, the moderator/trainer can discuss the nutrition values of those food items and what will be the best food items that can be selected instead of the limited money in hand.

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Slide 32 :

Physical activity is an essential correlate of the healthy diet, when we consider the development of NCDs. Therefore, along with the correction of dietary habits, it is of vital importance that physical activity of the community is also improved.

In addition to the diet control, physical activity also should be promoted as recommended to maintain good health of individuals. The amount of physical activity required to maintain good health varies according to the age, and these recommendations have been clearly stated out by the World Health Organization. Hence their recommendations are different for the age groups of 5 to 17 years, 18 to 64 years and for the elderly over the age of 65 years.

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Slide 33 :

Children and Adolescents aged 5 to 17 years

- Should do at least 60 minutes of moderate to rigorous intensity physical activities per day.
- Physical activity of over 60 minutes will provide additional health benefits.
- Should include activities that strengthen muscle and bone, at least 3 times per week.

Promoting physical activity among children is of vital importance, especially since childhood obesity is gradually rising in the community. Due to the unhealthy and highly competitive education system in the country, majority of the school children spend very limited time outdoors, engaging in active sports and physical activities. Therefore, all efforts must be made to promote these children to be engaged in some physical activity at least for an hour per day, to protect them from developing NCDs in the future.

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Slide 34 :

Adults aged 18 to 64 years

- Should do at least 150 minutes of moderate intensity physical activity throughout the week or do at least 75 minutes of vigorous intensity physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.
- For additional health benefits, adults should increase their moderate intensity physical activity to 300 minutes per week, or equivalent.
- Muscle strengthening activities should be done involving major muscle groups on 2 or more days a week.

Similar to the children, adults especially those who belong to the working age group, rarely have time for physical activity or to engage in stress relieving activities. For a vast majority of these people, quite a lot of time is spent sitting at work, in their offices or workplaces, and another several hours are spent on the road, travelling to and from work. Therefore, the amount of sustained physical activity is very limited within this age group. In addition, the diet of these persons is also not healthy in most instances. and thus, require special attention to improve their diet and physical activity level, for them to be protected from NCDs.

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Slide 35 :

Adults aged 65 years and above

- Should do at least 150 minutes of moderate intensity physical activity throughout the week, or at least 75 minutes of vigorous intensity physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.
- For additional health benefits, they should increase moderate intensity physical activity to 300 minutes per week, or equivalent.
- Those with poor mobility should perform physical activity to enhance balance and prevent falls, 3 or more days per week.
- Muscle strengthening activities should be done involving major muscle groups , 2 or more days per week.

Adults and elderly are an important group where both the diet and physical activity can be affected, and thus, the risk of NCD is much higher. Regular, streamlined physical activity programme can prevent overweight and obesity in this age group, as well as enable joint mobility and muscle strength to be maintained. This will ensure the elderly can remain active and will further protect them from NCDs.

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Slide 36 :

Types of Physical Activity

Type	Description	Examples
Moderate intensity physical activity	Aerobic physical activity sessions of at least 30 minutes, 5 days a week (If the goal of 30 minutes of physical activity cannot be met in a single session, multiple sessions lasting 10 minutes each, during the course of a day may also be encouraged)	Brisk walking, cycling, gardening and less strenuous sports activities
Vigorous intensity physical activity	Vigorous physical activity 75 minutes throughout the week	Running, fast swimming, fast cycling and strenuous sports activities
Muscle strengthening	Can be done after aerobic goal is achieved. Should be done involving major muscles groups on 2 or 3 non-consecutive days; in 8-12 repetitions; 2-4 sets with 2 minutes rest between sets	Squats, push-ups, pull-ups, Weights lifting
Flexibility	For full range of movement of joints and muscles. On daily basis, with 4 or more repetitions per muscle group, stretch to the point of slight discomfort.	Forward bend, toe touch, yoga

Physical activity can be categorized into several groups based on their intensity and requirement. Physical activity of moderate to high level intensity will enable weight loss and protection from NCDs. Similarly, strengthening exercises will ensure sustained muscle tone, to enable flexibility and fat burning in the muscles, which will further aid the protection from NCDs.

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Slide 37 :

Delivering a personalized dietary intervention with appropriate instructions

- This is best conducted as a case based discussion
- Cases :
  1. Person with a sedentary lifestyle
  2. Person with obesity
  3. Person with Diabetes Mellitus
  4. Person with High Blood pressure

All the participants should be divided into four groups. A case scenario should be given to each group to discuss the personalized dietary intervention with appropriate instructions (advise and diet plan). Approximately 30 minutes could be allocated to the discussion and preparation of the presentations. Then, each group should present their dietary intervention within the allocated time of 10 minutes. The resource parson/s will conduct a 5-minute discussion at the end of each presentation. (Refer to chapter 12 for answers to the case-based discussions)

Slide 38, 39, 40 and 41 : Case Scenarios

Case Scenario - 1

- A 36 years old gentleman with a sedentary life and a higher tendency for consuming unhealthy food frequently. After obtaining the 24-hour dietary history, how should he be advised/supported to plan his diet?

Case Scenario - 2

- A 39 years old female with BMI of 32Kgm^{-2} without other comorbidities. How would you advice ?

Case Scenario - 3

- A 46 years old female Patient with Diabetes controlled (but on and off get high blood sugar values). How would you advice ?

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Case Scenario - 4

- A 59-year-old female patient who is newly diagnose with hypertension comes to you asking for dietary advice. Her blood pressure is 160/90 mm Hg and she has been newly prescribed with antihypertensive drugs. She has a Body Mass Index (BMI) of 28.4 Kgm^{-2} with a weight of 74 Kg. Upon further inquiry you find her family salt consumption is considerably high.

i. What would be your weight reduction target for this patient to achieve a significant blood pressure reduction?

ii. Briefly explain the dietary and lifestyle recommendations you give to this patient to achieve the weight loss target mentioned above.

iii. Discuss the dietary advice you consider giving for this patient with regard to the reduction of blood pressure.

iv. Mention 4 practical strategies you enforce to cut down on patient's/family's salt consumption

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Slide 42 : Conclusion

Let's eat healthy food today and avoid future NCDs…

Chapter 8

Presentation Guideline – Session 03

Slide 01 :

Training Guide for Promoting a Healthy Diet For Prevention of NCDs

Session 03

Non-Communicable disease unit
Ministry of Health

This PowerPoint presentation is expected to be used during the third session of the training of staff on promoting a healthy diet. The presentation consists of 13 slides and contains sections related to food items recommended for a country's economic downturn and strategies to reduce the impact on nutrition due to the financial and economic crisis.

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Slide 02 :

Impact of the financial and economic recession on nutrition

- People tend to go for cheaper, refined, processed, and low-quality food when they face food shortages as well as price hikes.
- Over a prolonged period, such changes may have negative consequences for nutrition, both through the reduced quantity of foods consumed affecting the maintenance of energy balance, as well as reduced quality of foods consumed for maintaining sufficient intake of nutrients.
- In adults, this will lead to generalized body weakness and reduced immunity which leads to worsening of adverse health and economic consequences.

An increase in the cost of food in a situation such as a financial and economic crisis often leads to changes in the quantity and type of foods that are purchased by people. This may result in negative consequences for nutrition, through the reduced food intake for maintaining energy balance, as well as reduced quality of foods consumed.

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Slide 03 :

Impact of the financial and economic recession on nutrition

- It is essential to maintain individual nutrient requirements in terms of macro as well as micronutrients through low-cost, locally available and seasonal food.
- Food items such as starchy foods and pulse, animal-source foods, dairy, pulses, nuts, leafy greens, fruits and vegetables should be included in the daily diet in order to maintain dietary diversification.
- It is important to look for alternative wholesome foods grown in home gardens that are less expensive and can supplement the diet in a healthier manner.

It is important to consume a balanced diet with a variety, including cereals, vegetables, green leaves, fruits, pulses, fish/egg/lean meat, nuts and oily seeds. These should be consumed daily in the recommended amounts, to fulfill the requirements of calories and essential nutrients, to maintain and improve the overall health. Therefore, it is important to look for alternative wholesome low-cost foods that are locally available, to fulfill the daily nutrition requirement of the people in a situation of economic crisis.

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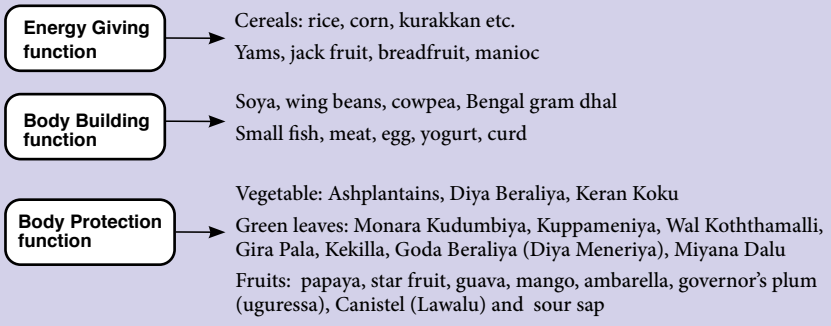
Slide 04 :

Food items/recipes that can be recommended during the country's economic recession



Boiled jack fruit, breadfruit, yams, and tubers are good substitutes for the staple food of Sri Lankans, which is rice. Most of the edible plants can be grown in our own home gardens, while some are found in the surrounding environment and some in water bodies. Nutrient-dense, herbal edible plants abund in Sri Lanka. Due to the ignorance of the people about their edibility, many herbs are destroyed by mistaking them as weeds.

Monara Kudumbiya, Kuppameniya, Wal Koththamalli, Gira Pala, Kekilla, Goda Beraliya can be consumed in the form of Melluma, Sambolaya and curry. Diya Beraliya, Keran Koku and Miyana Dalu are also good substitutes for vegetables. Raw fruits such as star fruit, guava, mango, ambarella, governor's plum, egg fruit and sour sap can be used in making curries.

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Slide 05 :

Food items/recipes that can be recommended during the country's economic recession

For the breakfast

Usual practice	Modification
Milk rice with katta sambol	Milk rice with mung beans or cowpea
Tempered chickpea	Tempered chickpea with green leaves/ Bengal gram dhal ("kadal parippu")
Manioc with scraped coconut	Manioc with kunisso mallum or can be mixed with leafy vegetables and 5-10 sprats / kunisso 1 tbsp
Sweet potatoes with scraped coconut	Sweet potatoes with (kunisso 1 tbsp. or leafy vegetables and scraped coconut in 1 tbsp of oil)
Herbal Kanji (Kola kenda)	Herbal Kanji (green leaves from home garden) (mix with some rice/ dhal/Bengal Gram Dhal/mung beans / corn as a thick porridge)

In general, there are different types of food items consumed for breakfast, but those food items can be modified to improve their nutritional value by adding pulses and locally available vegetables and green leaves, to prevent nutritional inadequacy especially during economically hard times.

Slide 06 :

Food items/recipes that can be recommended during the country's economic recession

For the lunch

Usual practice	Modification
Rice and curry (Rice 1 cup, Leafy vegetable (3 tbsp), one vegetable (3 tbsp) and fish/ meat 30g/ an egg with dhal/ beans / long beans/winged beans (3 tbsp)	Due to the crisis situation, one-pot or two-pot meal can be encouraged to prepare with wholesome, less expensive food items in order to fulfill macro and micro nutrition requirements.
	One-pot meal: Rice with locally available vegetables and leafy vegetables, 1 tbsp. of kunisso in 1 tbsp. of coconut oil
	Rice with one pot curry: add some dhal or cowpea with a vegetable available at home and green leaves
	Jackfruit Koththu (Boiled Jackfruits with a vegetable and a leafy vegetable, 1 tbsp. of kunisso/ 5-10 sprats with scraped coconut or 1 tbsp. of coconut oil)
	Ash plantain curry and tempered ash plantain peel with kunisso/sprats and rice

During crisis situations, one pot or two pot meals can be encouraged to prepare for lunch with wholesome, less expensive food items, in order to fulfill nutrition requirements. The modification would be done to replace the recommended practices.

Slide 07 :

Food items/recipes that can be recommended during the country's economic recession

Different curry recipes for lunch

- Curry of Jackfruit with spinach
- Manioc curry with green leaves
- Breadfruit curry with green leaves
- Kunisso sambal or malluma
- Thithbatu malluma
- Ridge Gourd Curry (Wetakolu Curry) with tempered Ridge Gourd peel and some sprats
- Mango/ Ambarella curry with green leaves
- Papaya Sambol dish with green leaves
- Long beans, wing beans, pumping, ladies fingers , brinjal, bitter gourd curries
- Green leaves : saarana, thampala, kankun, Anguna, passionfruit leaves, Thebu leaves etc.
- Boiled mashed jackfruit seeds- for evening or morning snack
- Consumption of one or two eggs per week and fish or meat twice per week will be enough for an adult

Slide 08 :

Food items/recipes that can be recommended during the country's economic recession

For the dinner

Usual practice	Modification
Hoppers with potato curry	String hoppers koththu- wing beans, scraped pumpkins , green leaves such as Kathurumurunga, murunga, Gotukola can add to the string hoppers with/ without an egg
String hoppers	
Dose with sambal	
Pol roti with katta sambol	Pol roti – flour, rice flour, Kurakkan flour, corn flour Pol roti mixed with vegetable / leafy vegetable from home garden
Pittu with potato curry	Vegetable mixed pittu with plain coconut curry
Noodles	Noodles mixed with locally available vegetables/green leaves and eggs

People tend to go for less expensive and low-quality food during difficult times hence, in order to ensure healthy eating, it is recommended to modify some food items by adding low-cost locally available vegetables and leafy vegetables.

Slide 09 :

Home gardening in the country's economic recession

Home gardening

- Individual home gardening
- Collective home gardening

Over recent years there has been growing interest to strengthen and intensify local food production in order to ensure food security. Consequently, there is much attention towards home gardens as a strategy to enhance household food security and nutrition. Home gardening can be categorized into two as individual home gardening and collective home gardening.

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Slide 10 :

Individual home gardening

- Home gardening can be encouraged as a family event
- Limited spaces in the garden can manage effectively and some uncommon pulses, yams and vegetables can be grown to cater to the daily meal
- Such as mung beans, cowpea, different types of yams and parts of the beet/radish/ carrot/leeks, etc.
- Quick maturing plants / seasonal plants can also be promoted for home gardening

Home gardening refers to the cultivation of a small portion of land which may be around the household or within walking distance from the family home. People can harvest many benefits along with fresh vegetables, fruits and herbs by home gardening. Home gardening always can be conducted as a family activity that enhances family bonding. It relieves stress and improves physical activity as well as increases the family's income.

It is recommended to plant quick maturing plants in addition to normal plants for home gardening in a situation like an economic crisis to provide foodstuffs to meet the family's needs.

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Slide 11 :

Collective home gardening

- This practice can be encouraged to fulfill household food and nutrient requirements
- Increase the production as well as the high diversity of crops
- Five to ten households, preferably, neighbors in an area can get together and decide on the type of food plants to be grown.
- Each household can grow up to five crops (different crops for different households) as per the space and resources available.
- When the time to harvest the yield comes, it can be shared among the number of families in the 'self-sufficient food unit'.

Apart from engaging in home gardening to fulfill household food and nutrient requirements, collective home gardening practice can increase the production. That will also contribute to a high diversity of foods. With this method of gardening food security can be well-assured.

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Slide 12 :

Advantages of collective home gardening

- Each family will get about 25 to 50 crops at a time depending on the number of crops a household has grown.
- Food security is also well-assured: high diversity of foods in such a self-sufficient food production unit, there will not be concerns about malnutrition.
- Yield is not polluted with health-damaging toxins: Home gardening involves small-scale food production which is carried out without the use of chemicals and toxins.
- Earth-friendly endeavor.

Slide 13 :

Thank You

Chapter 9

Management Protocol for Overweight at HLC/Primary care

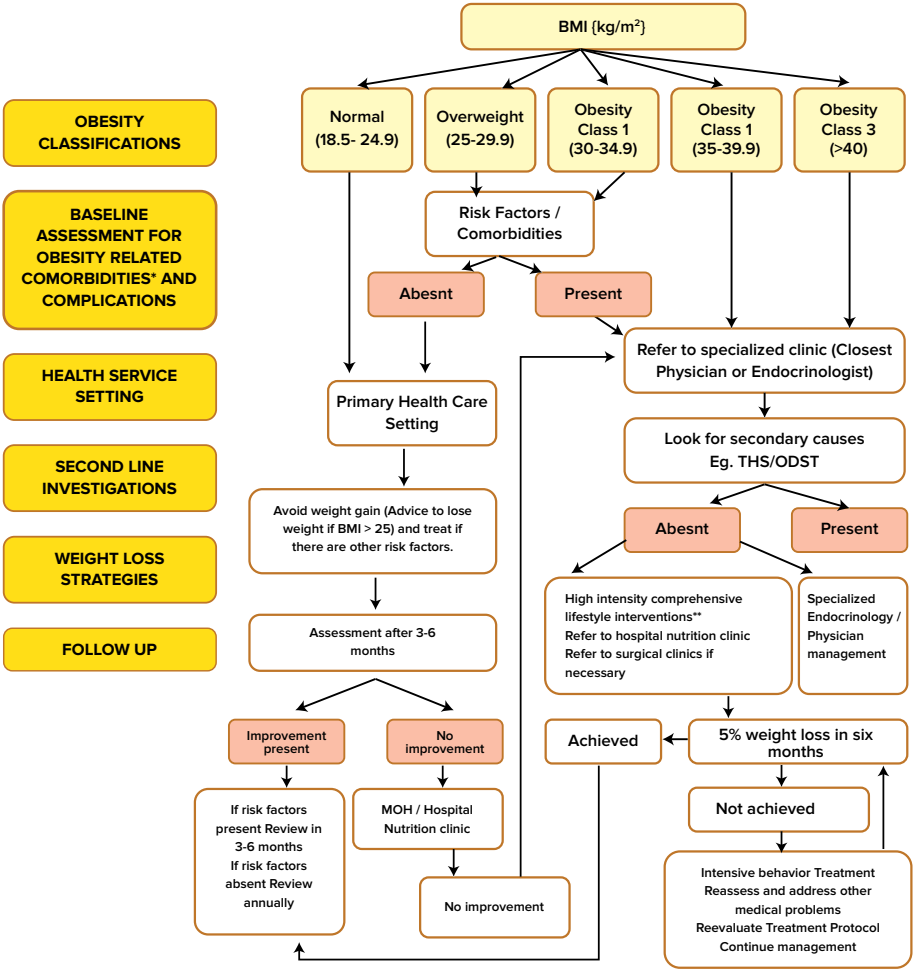

Figure 8 - Management Protocol for Overweight and Obesity
(Source :Guideline on Management of Overweight and Obesity among Adults in Sri Lanka. Directorate of NCD, 2018)

Chapter 10

Basic Management of a Client Requiring Dietary Advice

1. Obtain a general history including
    a. Personal information such as age, employment, financial status, and affordability etc.
    b. Current health conditions such as diabetes, heart disease etc., and any long-term medications the person is taking.
    c. Personal food habits, food concepts, cultural and religious customs related to food.
    d. Perform a 24-hour dietary recall
2. Conduct relevant general examination and nutrition specific physical examination, including blood pressure readings.
3. Review any available investigations and health records.
4. Provide appropriate dietary advice or if complicated patient, refer to the hospital nutrition clinic

Chapter 11

Obtaining a 24-Hour Dietary Recall

A 24-hour dietary recall involves asking subjects to recall and describe all the food and drink consumed in the previous 24 hours, from the time of waking up, to going to sleep at night. A recall interview typically requires 20 to 30 minutes to complete, but it may take considerably longer if many different types of food were consumed. This information is obtained according to a to specific format (Annex III), which will enable easy understanding and interpretation. Where convenient, a dietary survey using the weighment method can also be conducted (Annex IV).

The 24-hour dietary recall should include all food and drink consumed during the 24hr period including all meals, snacks, drinks, "nibbles", sweets etc. The client (or parent if the subject is a young child) may find it easier to remember under headings such as 'early morning', 'breakfast', mid-morning', 'mid-day', 'midafternoon', 'evening meal', 'late evening' and 'bedtime'.

Main Points to be recorded are :

1. Approximate time of eating or drinking
2. Quantity or amount consumed e.g., 6 tablespoons, 1 cup, 1 slice, etc.
3. Type of food consumed. e.g., orange juice, chocolate, orange squash
4. Addition of ingredients during preparation and cooking. e.g., sugar / oil

In order to make the record as accurate as possible, probe further at the end of the interview, especially if very few foods and drinks have been reported. Remember to ask about drinks (assume drinks are consumed with each eating occasion) and about late-night eating (e.g., 'Did you have anything else, eat and/or drink once you were in bed? or just before get into the bed') as well.

Consider a normal day for the 24 hour recall and avoid special days or festive seasons (wedding, party).

Chapter 12

Dietary Interventions and Case Discussions

Case scenarios are used to discuss about the importance of discussing multiple presentations of people with nutrition problems. Also, this will give an opportunity to provide information to the patient on the available options for shared care, or referral of such patients for specialized care. Adequate attention needs to be given to the overall dietary requirements of the clients when providing risk reduction dietary advice (Food Based Dietary Guidelines, 2022).

a. Case scenario 1

A 36 years old gentleman with a sedentary life and a higher tendency for frequently consuming unhealthy food, requests dietary advice. After obtaining the 24-hour dietary history, how should he be advised/supported to plan his diet?

A sample diet menu of 1800-2000 kcal suitable for a normal-weight sedentary person can be initiated for this type of patient.

Breakfast	Rice 1 ½ cups Dhal 3 tablespoons (cooked) Bean curry 3 tablespoons (cooked)
Snack (Morning)	One medium size banana or 1 tablespoon of nuts.
Lunch	Rice 1 ½ cups Ash plantain 3 tablespoons with 1 ½ tablespoons of gravy Brinjal (tempered) 3 tablespoons Fish 1 medium size piece “Gotukola mallum” 3 tablespoons
Snack (Afternoon)	½ cup of milk tea
Dinner	1 ½ cups of rice 1 boiled egg Spinach and dhal 3 tablespoons “Watakolu” 3 tablespoons 1 piece of papaya

Below is another sample diet menu suitable for a normal weight sedentary patient, with several options for snacks as well.

Breakfast	Rice 1 cup, Dhal 3 tbs tempered with 1tsp of coconut oil* Cooked Carrot 3tbs with coconut gravy 1tbs 1 egg boiled
Morning snack (Options)	1 cup cubed papaya 1 medium banana 1 medium pomegranate 1 medium mango 5 large / 10 small grapes watermelon 1small wood apple ½ small belli fruit mandarins 1 small orange (6 cm across) 1 small apple (5 cm across) 5 strawberries ½ medium avocado
Lunch	Rice 1 cup 1 piece of fish (30g) cooked Cooked cucumber /Cauliflower 3tbs with 1tbs of gravy Green leafy vegetables 3 tablespoons Vegetable salad 3 tablespoons
Evening snack (Options)	nuts 2 tablespoons curd ½ cup 1 glass of milk ½ medium avocado
Dinner	1 cup rice Dhal 3 tbs tempered with1tsp of coconut oil* vegetable cooked (snake gourd) 3tbs with coconut gravy 1tbs Green leaves 3 tbs

b. Case scenario 2

A 39 years old female with a BMI of 32Kgm^{-2} without other comorbidities. How would you advise?

- In the nutrition assessment a detailed history including the dietary history will be obtained to identify the unhealthy life-style practices.
- Nutrition assessment will be completed with the nutrition focused physical examination and the biochemical investigations.
- According to the given scenario, the nutrition diagnosis of this 39 years old lady would be Obesity class I without other commodities and assuming no other obesity related complications

Goals of nutrition management
- 10% weight reduction in 4 – 6 months
- Prevent obesity related complications
- Maintain reduced weight

Nutrition management:
- Nutrition counseling
  - Emphasize the importance of weight reduction and maintenance
  - Target weight loss 0.5 kg per week
  - Motivate to change the unhealthy lifestyle habits identified
  - Importance of combining exercises
- Reduced Energy Diet plan (RED)(1000 – 1200kcal/day)

Example menu plan (This will be prescribed considering patient's dietary choices as well)

Breakfast	4-5 string hoppers Dhal/ keselmuwa curry 2 tbs Kunissan mallum 1 tbs
Mid-morning snack	½ guava
Lunch	1 cup of rice 1 egg 3 tbs of beans curry 3 tbs of gotukolamallum
Mid afternoon snack	½ cup of non-fat fresh milk
Dinner	1 cup of noodles with mixed vegetables 1 cup Chicken (60g= size of 2 boxes of matches) 2 tbs of dhal curry

Structure to follow up when prescribing a LED (Low-Energy-Dense) diet plan

Food group	Number of servings per day	1 serving size	1 serving size equal to:
Cereal/Yam and starchy food 	5 – 6	½ cup	½ cup rice ½ cup of cooked noodles ½ cup of boiled sweet potato / Manioc / Raja ala / other yam 1 slice of bread (30g) 2 - 3 string hoppers 1 hopper ½ rotti (about 9cm diameter and 0.5cm thick) 1 dosai (about 10cm in diameter) ¾ cup of boiled corn ½ cup jack/ bread fruit 3 cm height 5 cm diameter pittu
Pulses 	1	1/2 cup / 3 tbs	3 tbs dhal 3 tbskadalaparippu 3 tbsmungparippu ½ cup chickpeas ½ cup cowpea ½ cup green gram ½ cup soya beans
Fish / Poultry / meat / Egg 	3-4	30 g (Size of Two match boxes)	2 match box size fish 2 match box size chicken 1 match box size dry fish 9-10sprats 1 egg
 Dairy products	1	1/2 cup	1/2 cup nonfat fresh milk Full 1 tbs nonfat milk powder
Nuts and seeds 	1	1 full tbs	1 full tbs Peanut 7 full tbs Cashew 1 full tbs pumpkin / sun flower seeds 1 Thalaguli 10 Kottang

Root vegetables starchy vegetables 	1	3 tbs	3 tbs Ash plantain / Pumpkin/ Bread fruit/ Jack fruit/ Potato/ sweet potato/ manioc/ other yams/ Carrot/ Beet/ Radish/ Nokol/ Kohila/ Lotus roots
Green Vegetables 	1	3 tbs	3 tbs Beans/ Murunga/ Wetakolu/ Pathola/ Dambala/ Bitter gourd (Karavila)/ Thibbatu / Elabatu/ Lunu mal/
Leafy vegetables 	2	3 tbs	3 tbs Gotukola/ Kathurumurunga/ Mukunuwenna/ Spinach/ Kungkun/ Anguna/ Thembu/ Sarana/ Thampala/ Murunga leaves/ Pumpkin leaves/ Carrot leaves/ beat leaves/ Radish leaves/ Nokol leaves/ Cabbage leaves/ Passion leaves/ Manioc leaves/ Tender kohila leaves/ Onion leaves
Other vegetables 	1	3 tbs	3 tbs Brinjal/ Cucumber/ Capsicum/ Tomato/ Keselmuwa/ Cauliflower/ Ambaralla/ Green mangos

Fruits 	2	1small (100g) or ½ cup of fresh cut fruit ½ cup unsweetened fruit juice 1 ½ tbs of dried fruit	1 cup cubed papaya 1 small banana ½ large guava 1 medium pomegranate 1 medium mango 1 cup cubed papaya 1 small banana ½ large guava 1 medium pomegranate 1 medium mango ½ small jambola (grapefruit) ½ cup fresh pineapple 5 large / 10 small grapes 1 cup cubed water melon 5-6 jack fruit 1 medium wood apple 1 small belli fruit 2 medium ambaralla 10 – 15 jambu 7-9 rambuttan ½ cup anoda 2 pieces of durian 2 medium passion fruits 10 fruits of nelli / lovi / veralu 2 small mandarin 1 small orange (6 cm across) 1 small apple (5 cm across) 5 strawberries ½ cup mulberry ½ medium avocado
 Coconut	½	2 tbs Grated coconut or ½ cup Coconut milk	½ cup of coconut milk 2 tbs coconut 3 tbs gravy
Oil* 	2/3 (10 ml)	1 tbs (5 ml)	1 tbs Coconut oil/ Olive oil/ sesame oil/ Soya oil/ Sun flower oil/ Rice bran oil
Water	6 – 8	1 cup	
Other Beverages	2 -3	1 cup	1 cup Light plain tea/ coffee / Herbal drinks (Belimal, Ranawara) /Coriander water/ king coconut / Coconut water

1 cup – 200 ml cup, tbs = table spoon, tsp = tea spoon
*When choosing oil, take only 5 ml of coconut oil and use 5 ml from other oil to improve the fat composition

Food plate guide for an obese person

Figure 9 - Recommended Food Plate for Obesity Reduction

Follow up:
Arrange follow up in 1 month to assess whether there is satisfactory weight loss and then decide on further follow up plan

c. Case scenario 3

A 46 years old female patient with Diabetes who is controlled on medication, but on and off recording high blood sugar values. In this case, the objective of a diet plan is to maintain a low glycemic level in the blood and is a part of the overall management of Diabetes at the primary care level (Management of Diabetes Mellitus, 2018).

Every morning	Plain Tea/Kottamalli/Belimal without/Low sugar – no added sugar
Breakfast	Pulses (Green Gram/cowpea) 1 cup, Scraped coconut 1tsp Katta Sambal
Morning snack (Options)	1 cup cubed papaya (Lightly Ripen) 1 small banana (Lightly Ripen) 1 medium pomegranate 5 large / 10 small grapes 1 cup cubed watermelon 1 medium wood apple 1 small belli fruit 2 small mandarin 1 small orange (6 cm across) 1 small apple (5 cm across) 5 strawberries (Snack should be used with low sugar/ whole fruit)
Lunch	Rice (Parboiled/Nadu) 1 cup 1 piece of fish(30g) cooked/1 boiled egg A-Vegetables (Cooked cucumber /Cauliflower) 3tbs with 1tbs of gravy B-Vegetables -Boiled (Beans/Carrot/Cabbage) 3 tbs Green leafy vegetables 3 table spoons
Evening snack (Options)	nuts 2 tablespoons/1 small Guava curd ½ cup without/low sugar Raw pieces of Cucumber Plain Tea/Kottamalli/Belimal without/Low sugar
Dinner (Options)	6-8 Red String hoppers with Dhal curry/3 Hoppers/ 2 small Rottee (Rice Flour + Kurakkan Flour/Atta)/ 1 cup rice (Parboiled/Nadu) Dhal 3 tbs tempered with1tsp of coconut oil* vegetable (Brinjals) cooked 3tbs with coconut gravy 1 tbs Vegetable salad 3 tbs
Late Dinner Snack	Fruit (lightly ripen/Whole Fruit)/ Plain Tea/ Kottamalli/Belimal without/Low sugar

d. Case scenario 4

A 59-year-old female patient who is newly diagnosed with hypertension is requesting dietary advice. Her blood pressure is 160/90mmHg and she has been newly prescribed with antihypertensive drugs. She has a Body Mass Index (BMI) of 28.4 Kgm^{-2} with a weight of 74 Kg. Upon further inquiry, her family salt consumption is found to be considerably high.

i. What would be your weight reduction target for this patient to achieve a significant blood pressure reduction?
   The weight reduction target of a person should be a 7% to 10% reduction from the current weight and maintain it for at least 1 year.

ii. Briefly explain the dietary and lifestyle recommendations you give to this patient to achieve the weight loss target mentioned above.
   - A low-calorie diet for females is 1000 – 1200 Kcal/day while for males, it is 1400 – 1600 Kcal/day.
   - Limit the salt intake to ½ teaspoon per day (Low salt diet)
   - Limit saturated fats and trans fats in the diet such as red meats, Bakery products, biscuits, margarine.
   - Do physical activities for 30 minutes/day for 5 days, with aerobics and resistant training every other day for at least 3 days of the week.

iii. Discuss the dietary advice you consider giving for this patient with regard to the reduction of blood pressure.
   - Portion control diet
   - Limit the added sugar and salt to less than 6 teaspoons of added sugar and ½ teaspoon of added salt.
   - Limit the consumption of processed food and red meat.
   - Involve in physical activities of 30 minutes per day of aerobics and 3 days per week of muscle strengthening exercises.
   - Consume more whole grains, pulses, fish, poultry and nuts.
   - Reduce the consumption of foods high in saturated fats and trans fats.
   - Consume more fruits and vegetables.

iv. Mention 4 practical strategies you enforce to cut down on patient's/family's salt consumption

- Stop adding salt to the rice when cooking.
- Avoid processed meat and other foods.
- Avoid high salty snacks (Murukku, Tipi-tip, small savory biscuits etc.).
- Avoid adding salt when having a meal.
- Do not add salt to dry fish and sprats when cooking.
- Add other spices

Dietary modification is an important management aspect of cardiovascular disease and needs to be addressed at the Primary Healthcare level as well (Cardiovascular Risk Management, 2018).

Chapter 13

Multiple Choice Questions for Pre-Test and Post-Test Assessment

1. The benefits of eating a balanced healthy diet are,
   a. Improve mood
   b. Improve good health
   c. Improve immunity
   d. All of the above.

2. We always advocate to consume a _____ of nutritious foods.
   a. variety
   b. daily serving
   c. spoonful
   d. all of the above

3. A healthy, balanced diet includes these three major nutrients (macronutrients) :
   a. calories, fat, carbohydrate
   b. carbohydrate, protein, fat
   c. protein, fiber, fat
   d. don't know

4. Which combination of foods provide more of the essential nutrients that are often lacking among people?
   a. fruit, vegetables, and protein shakes
   b. seafood, whole grains, and gluten-free foods
   c. fruit, vegetables, whole grains and seafood
   d. don't know

5. Bread, cereal and yams are commonly the best source of which important nutrient ?
   a. protein
   b. fat
   c. carbohydrate
   d. water
   e. don't know

6. Chicken, legumes (dried beans and peas), fish, soy foods and eggs are a good source of which nutrient?
   a. protein
   b. fat
   c. carbohydrate
   d. water
   e. don't know

7. Which foods are parts of the dairy group?
   a. milk, eggs and cheese
   b. milk, cheese and yogurt
   c. soymilk, eggs and cheese
   d. don't know

8. In the healthy plate model proportions of different major food components are:
   a. 1/2 protein, 1/2 vegetables
   b. 1/3 protein, 1/3 vegetables, 1/3 fruit
   c. 1/2 vegetables and, 1/4 protein, 1/4 whole grains
   d. None above

9. On food labels, the amount of sugar is listed in grams. Hence, one teaspoon of sugar equals …….
   a. 2-3 grams
   b. 4-5 grams
   c. 6-7 grams
   d. 8 grams

10. Where are added sugars usually found?
   a. Cereals
   b. Fruit drinks
   c. Desserts
   d. All of the above

11. The nutrient that has the most calories per gram of weight?
   a. carbohydrate
   b. protein
   c. fat
   d. don't know

12. Which type of fat are healthy for heart and blood vessels?
    a. saturated fats
    b. trans fats
    c. Omega-3 fats a type of polyunsaturated fat
    d. partially hydrogenated fats

13. Which type of grain is the healthiest and contains natural nutrients?
    a. enriched grains
    b. refined grains
    c. whole grains
    d. don't know

14. About how many servings of fruits you should take daily?
    a. One serving
    b. 2-3 servings
    c. 4 servings
    d. None of it

15. Which three foods are of potentially high sources of trans fatty acids.
    a. fish and chips, lean red meat, canola margarine
    b. commercial biscuits, table margarine, pastries
    c. nuts, oysters, yoghurt
    d. seeds, cheese, canned fish

16. Which is considered as a complete protein food?
    a. Almond
    b. Soya bean
    c. Cashew nut
    d. None of the above

17. Which of the following statements is true?
    a. High Glycemic Index foods lead to slower release of sugars into circulation
    b. High Glycemic Load foods lead to slower release of sugars into circulation
    c. Low Glycemic Index foods lead to slower release of sugars into circulation
    d. Low Glycemic Load foods lead to slower release of sugars into circulation
    e. B and C

18. Which of the following option/s are known to help reduce cholesterol levels?
    a. Saturated fatty acids
    b. Unsaturated fatty acids
    c. Omega-3 fatty acids
    d. Omega-6 fatty acids

e. Monounsaturated fatty acid
f. Polyunsaturated fatty acids

19. Which of the following statements is correct?
    a. Evidence from a variety of social surveys has confirmed that sedentary lifestyle is increased in the modern society.
    b. Work commitment and lack of leisure time are being identified as most common barriers to engage in physical activity commitments and a lack of leisure time.
    c. Both of these

20. Which of the following diseases have been associated with sedentary lifestyle?
    a. colon cancer
    b. stroke
    c. cardiovascular disease
    d. all of the above

21. Exercise type which improves cardiovascular health?
    a. Flexibility
    b. Aerobic exercise
    c. Strength training
    d. Sports

22. Which is a form of exercise
    a. Walking
    b. Swimming
    c. Cycling
    d. All the above

23. Recommended daily intake of water for an average adult is,
    a. 0.5L per day
    b. 0.75L per day
    c. 1 L per day
    d. 1.5 – 2L per day
    e. 4-5 L per day

24. Vegetarian alternatives to meat, fish and poultry as sources of protein are:
    a. Maize
    b. Nuts
    c. Legumes
    d. Pumpkin
    e. All of the above

පූර්ව-පරීක්ෂණ සහ පසු-පරීක්ෂණ ඇගයීම සඳහා බහුවරණ ප්‍රශ්ණ

1. සමබල ආහාර වේලක් ගැනීමෙන් ලැබෙන ප්‍රතිලාභ නම්,
   a. යහපත් මානසික තත්ත්වයක් පවත්වාගෙන යාමට උපකාරීවේ.
   b. සෞඛ්‍ය වැඩි දියුණු කරයි.
   c. ප්‍රතිශක්තිය වැඩි දියුණු කරයි.
   d. ඉහත සියල්ලම

2. සෑම විටම පෝෂ්‍යදායී ..... ආහාර පරිභෝජනය කිරීමට උනන්දු කළ යුතුය.
   a. විවිධත්වයෙන් යුතු
   b. ශක්ති ජනක
   c. සම්පූර්ණයෙන් පිරවූ හැන්දක්
   d. ඉහත සියල්ලම

3. සෞඛ්‍ය සම්පන්න සමබල ආහාර වේලක අඩංගු විය යුතු ප්‍රධාන පෝෂක තුන ..... වේ
   a. කැලරි, මේදය, කාබෝහයිඩ්‍රේට්
   b. කාබෝහයිඩ්‍රේට්, ප්‍රෝටීන්, මේදය
   c. ප්‍රෝටීන්, කෙදි, මේදය
   d. නොදනී

4. අත්‍යවශ්‍ය පෝෂ්‍ය පදාර්ථ වැඩිපුර සපයන ආහාර සංයෝග මොනවාද?
   a. පළතුරු, එළවළු සහ රටකජු
   b. මුහුදු ආහාර, සම්පූර්ණ ධාන්‍ය සහ ග්ලූටන් රහිත ආහාර
   c. පළතුරු, එළවළු නිවුඩ්ඩ සහිත ධාන්‍ය සහ මුහුදු ආහාර
   d. නොදනී.

5. පාන්, ධාන්‍ය සහ අල සාමාන්‍යයෙන් සපයන වැදගත් පෝෂක ප්‍රභවය කුමක්ද?
   a. ප්‍රෝටීන්
   b. මේදය
   c. කාබෝහයිඩ්‍රේට්
   d. ජලය
   e. නොදනී.

6. කුකුල් මස්, රනිල කුලයට අයත් බෝග (වියළි බෝංචි සහ කඩල) මාළු, සෝයා ආහාර සහ බිත්තර කුමන පෝෂ්‍ය පදාර්ථයක ප්‍රභවක්ද?

a. ප්‍රෝටීන්
b. මේදය
c. කාබෝහයිඩ්‍රේට්
d. ජලය
e. නොදනී

7. කිරි ආශ්‍රිත නිෂ්පාදන වලට අයත් ආහාර මොනවාද?

a. කිරි, බිත්තර සහ චීස්
b. කිරි, චීස් සහ යෝගට්
c. සෝයා කිරි, බිත්තර සහ චීස්
d. නොදනී

8. වැඩිහිටියෙකුට නිර්දේශ කරනු ලබන බත් පිඟානේ තිබිය යුතු ප්‍රධාන ආහාර කාණ්ඩ?

a. 1 /2 ප්‍රෝටීන්, 1 / 2 එළවළු
b. 1 / 3 ප්‍රෝටීන්, 1 / 3 එළවළු, 1 / 3 පළතුරු
c. 1 / 2 එළවළු, 1 / 3 ප්‍රෝටීන්, 1 / 4 සම්පූර්ණ ධාන්‍ය
c. ඉහත කිසිවක් නැත.

9. ආහාර ලේබල වල සීනි ප්‍රමාණය ග්‍රෑම් වලින් දක්වා ඇත. එය සීනි තේ හැන්දකට සමාන වේ.

a. 2-3 ග්‍රෑම්
b. 4-5 ග්‍රෑම්
c. 6-7 ග්‍රෑම්
d. ග්‍රෑම් 8 යි

10. එකතු කළ සීනි සාමාන්‍යයෙන් සොයා ගත හැක්කේ මින් කුමන ආහාරයෙන්ද?

a. ධාන්‍ය වර්ග
b. පළතුරු බීම
c. අතුරුපස
d. ඉහත සියල්ලම

11. බර ග්‍රෑම් එකකට වැඩි කැලරි ප්‍රමාණයක් ඇති පෝෂකය?
    a. ප්‍රෝටීන්
    b. මේදය
    c. කාබෝහයිඩ්‍රේට්
    d. නොදනී

12.හෘදය සහ රුධිර වාහීනි සඳහා සුදුසු සෞඛ්‍ය සම්පන්න මේද වර්ගය කුමක්ද?
    a. සංතෘප්ත මේදය
    b. ට්‍රාන්ස් මේදය
    c. ඔමෙගා-3 මේද බහු අසංතෘප්ත මේද වර්ගයකි
    d. අර්ධ වශයෙන් හයිඩ්‍රජනීකෘත මේද

13. වඩාත් සෞඛ්‍ය සම්පන්න සහ ස්වාභාවික පෝෂක අඩංගු ධාන්‍ය වර්ගය කුමක්ද?
    a. පොහොසත් ධාන්‍ය
    b. පාහින ලද ධාන්‍ය වර්ග
    c. නිවුඩ්ඩ සහිත ධාන්‍ය වර්ග
    d. නොදනී

14. ඔබ දිනකට පලතුරු වර්ග කීයක් ගත යුතුද?
    a. එක් ප්‍රමාණයක්
    b. 2-3 ප්‍රමාණයක්
    c. 4 ප්‍රමාණයක්
    d. එකක්වත් නෑ

15. ට්‍රාන්ස් මේදය වැඩි වශයෙන් අඩංගු වී ඇති ප්‍රභවයන් ඇති ආහාර තුන.
    a. මාළු සහ චිප්ස්,මස්, කැනෝලා මාගරින්
    b. බිස්කට්, මාගරින්, ප්‍රේස්ට්
    c. ඇට වර්ග, බෙල්ලන්, යෝගට්
    d. බීජ, චීස්, ටින් මාළු

16. සම්පූර්ණ ප්‍රෝටීන් ආහාරයක් ලෙස සැලකෙන්නේ කුමක්ද?
    a. ආමන්ඩ්
    b. සෝයා බෝංචි
    c. කජු
    d. ඉහළ තිබෙන කිසිවක් නොවේ.

17. පහත සඳහන් කුමන ප්‍රකාශය සත්‍යද?
    a. ඉහළ ග්ලයිසීමික් දර්ශකයක් සහිත ආහාර, සීනි, රුධිර සංසරණ පද්ධතියට සෙමින් මුදා හැරීම සිදු කරයි.
    b. අධික ග්ලයිසීමික් බර (High Glycemic Load) සහිත ආහාර, සීනි, රුධිර සංසරණ පද්ධතියට සෙමින් මුදා හැරීම සිදු කරයි.
    c. අඩු ග්ලයිසීමික් දර්ශක ආහාර නිසා සීනි, රුධිර සංසරණ පද්ධතියට සෙමින් මුදා හැරීම සිදු කරයි.
    d. අඩු ග්ලයිසීමික් බර (Low Glycemic Load) සහිත ආහාර, සීනි, රුධිර සංසරණ පද්ධතියට සෙමින් මුදා හැරීම සිදු කරයි.
    e. බී සහ සී

18. කොලොස්ටරෝල් මට්ටම අඩුකිරීමට උපකාරී වේ.
    a. සංතෘප්ත මේද අම්ල
    b. අසංතාප්ත මේද අම්ල
    c. ඔමේගා-3 මේද අම්ල
    d. ඔමේගා-6 මේද අම්ල
    e. ඒක අසංතෘප්ත
    f. බහු අසංතෘප්ත

19. පහත සඳහන් කුමන ප්‍රකාශය නිවැරදිද?
    a. නූතන සමාජය තුළ ක්‍රියාශීලි නොවන ජීවන රටාව වැඩි වී ඇති බව විවිධ සමීක්ෂණ වලින් සාක්ෂි සනාථ වී ඇත.
    b. ශාරීරික ක්‍රියාකාරකම් වල නිරත වීමට ඇති පොදු බාධක වනුයේ විවේක කාලය නොමැතිකම සහ රැකියා සඳහා කැපවීම හඳුනාගෙන ඇත.
    c. මේ දෙකම

20. ක්‍රියාශීලි නොවන ජීවන රටාව සමග සම්බන්ධ වී ඇති රෝග මොනවාද?
    a. බඩවැලේ පිළිකා
    b. ආඝාතය
    c. හෘද සහ රෝග වාහිනී රෝග
    d. ඉහත සියල්ලම

21. හෘද වාහිනී සෞඛ්‍ය වැඩි දියුණු කරන ව්‍යායාම වර්ග වනුයේ?
    a. නම්‍යශීලි බව
    b. Aerobic අභ්‍යාස
    c. ශක්තිය පුහුණු කිරීම
    e. ක්‍රීඩා

22. ව්‍යායාම ආකාරයකි.

a. ඇවිදිනවා
b. පිහිනීම
c. බයිසිකල් පැදීම
d. ඉහත සියල්ලම

23. සාමාන්‍ය වැඩිහිටියෙකු සඳහා නිර්දේශිත දෛනික ජලය පානය

a. දිනකට 0.5 L
b. දිනකට 0.75 L
c. දිනකට 1 L
d. දිනකට 1.5 - 2 L
e. දිනකට 4 - 5 L

24. ප්‍රෝටීන් ප්‍රභවයන් ලෙස මස්, මාළු සහ කුකුළු මස් සඳහා නිර්මාංශ විකල්ප වනුයේ?

a. බඩ ඉරිගු
b. කජු වර්ග
c. රනිල කුලයට අයත් බෝග
d. වට්ටක්කා
e. ඉහත සියල්ලම

சோதனைக்கு முந்தைய மற்றும் சோதனைக்கு பிந்தைய மதிப்பீட்டிற்கான பல தேர்வு கேள்விகள்

1. சரிவிகித ஆரோக்கியமான உணவை உட்கொள்வதால் கிடைக்கும் நன்மைகள்,

a. மனநிலையை மேம்படுத்தவும்

b. நல்ல ஆரோக்கியத்தை மேம்படுத்துங்கள்

c. நோய் எதிர்ப்பு சக்தியை மேம்படுத்தவும்

d. மேலே உள்ள அனைத்தும்

2. நாங்கள் எப்போதும் …….. சத்தான உணவுகளை உட்கெ-ாள்ள வேண்டும் என்று பரிந்துரைக்கிறோம்.

a. பல்வேறு

b. தினசரி சேவை

c. கரண்டி அளவு

d. மேலே உள்ள அனைத்தும்

3. ஆரோக்கியமான, சமச்சீர் உணவில் இந்த மூன்று முக்கிய ஊட்டச்சத்-துக்கள் (மேக்ரோநியூட்ரியண்ட்ஸ்) அடங்கும்.

a. கலோரிகள், கொழுப்பு, கார்போஹைட்ரேட்

b. கார்போஹைட்ரேட், புரதம், கொழுப்பு

c. புரதம், நார்ச்சத்து, கொழுப்பு

d. தெரியாது

4. எந்த உணவுகளின் கலவையானது மக்களிடையே அடிக்கடி இல்லாத அத்தியாவசிய ஊட்டச்சத்துக்களை அதிகமாக வழங்குகிறது?

a. பழங்கள், காய்கறிகள் மற்றும் புரத குலுக்கல்

b. கடல் உணவு, முழு தானியங்கள் மற்றும் பசையம் இல்லாத உணவுகள்

c. பழங்கள், காய்கறிகள், முழு தானியங்கள் மற்றும் கடல் உணவுகள்

d. தெரியாது

5. ரொட்டி, தானியங்கள் மற்றும் கிழங்குகள் பொதுவாக எந்த முக்கியமான ஊட்டச்சத்தின் சிறந்த மூலமாகும்?

a. புரத
b. கொழுப்பு
c. கார்போஹைட்ரேட்
d. தண்ணீர்
e. தெரியாது

6. கோழி, பருப்பு வகைகள் (உலர்ந்த பீன்ஸ் மற்றும் பட்டாணி), மீன், சோயா உணவுகள் மற்றும் முட்டைகள் எந்த ஊட்டச்சத்தின் நல்ல மூலமாகும்?

a. புரத
b. கொழுப்பு
c. கார்போஹைட்ரேட்
d. தண்ணீர்
e. தெரியாது

7. பால் குழுவின் பகுதிகள் என்ன உணவுகள்?

a. பால், முட்டை மற்றும் சீஸ்
b. பால், சீஸ் மற்றும் தயிர்
c. சோயாமில்க், முட்டை மற்றும் சீஸ்
e. தெரியாது

8. ஆரோக்கியமான தட்டு மாதிரியில் பல்வேறு முக்கிய உணவுக் கூறுகளின் விகிதங்கள்:

a. 1/2 புரதம், 1/2 காய்கறிகள்
b. 1/3 புரதம், 1/3 காய்கறிகள், 1/3 பழங்கள்
c. 1/2 காய்கறிகள் மற்றும், 1/4 புரதம், 1/4 முழு தானியங்கள்
d. மேலே எதுவும் இல்லை

9. உணவு லேபிள்களில், சர்க்கரையின் அளவு கிராமில் பட்டியலிடப்பட்டுள்ளது. எனவே, ஒரு டீஸ்பூன் சர்க்கரை சமம்.....

a. 2-3 கிராம்

b. 4-5 கிராம்

c. 6-7 கிராம்

d. 8 கிராம்

10. சேர்க்கப்பட்ட சர்க்கரைகள் பொதுவாக எங்கே காணப்படுகின்றன?

a. தானியங்கள்

b. பழ பானங்கள்

c. இனிப்பு வகைகள்

d. மேலே உள்ள அனைத்தும்

11. ஒரு கிராம் எடையில் அதிக கலோரிகளைக் கொண்ட ஊட்டச்சத்து?

a. கார்போஹைட்ரேட்

b. புரத

c. கொழுப்பு

d. தெரியாது

12. எந்த வகையான கொழுப்பு இதயம் மற்றும் இரத்த நாளங்களுக்கு ஆரோக்கியமானது?

a. நிறைவுற்ற கொழுப்புகள்

b. டிரான்ஸ் கொழுப்புகள்

c. ஒமேகா-3 கொழுப்புகள் ஒரு வகை பாலிஅன்சாச்சுரேட்டட் கொழுப்பு

d. பகுதி ஹைட்ரஜனேற்றப்பட்ட கொழுப்புகள்

13. எந்த வகையான தானியமானது ஆரோக்கியமானது மற்றும் இயற்கையான சத்துக்களைக் கொண்டுள்ளது?

a. செறிவூட்டப்பட்ட தானியங்கள்

b. சுத்திகரிக்கப்பட்ட தானியங்கள்

c. முழு தானியங்கள்

d. தெரியாது

14. தினமும் எத்தனை பழங்களை நீங்கள் எடுத்துக்கொள்ள வேண்டும்?

a. ஒரு சேவை

b. 2-3 பரிமாணங்கள்

c. 4 பரிமாணங்கள்

d. அதில் எதுவுமில்லை

15. எந்த மூன்று உணவுகள் டிரான்ஸ் ∴பேட்டி ஆசிட்களின் அதிக ஆதாரங்களைக் கொண்டுள்ளன.

a. மீன் மற்றும் சிப்ஸ், ஒல்லியான சிவப்பு இறைச்சி, கனோலா மார்கரின்

b. வணிக பிஸ்கட், டேபிள் மார்கரின், பேஸ்ட்ரிகள்

c. கொட்டைகள், சிப்பிகள், தயிர்

d. விதைகள், சீஸ், பதிவு செய்யப்பட்ட மீன்

16. முழுமையான புரத உணவாகக் கருதப்படுவது எது?

a. பாதம் கொட்டை

b. சோயா பீன்

c. முந்திரிப்பருப்பு

d. மேலே எதுவும் இல்லை

17. பின்வரும் கூற்றுகளில் எது உண்மை?

a. உயர் கிளைசெமிக் இண்டெக்ஸ் உணவுகள், சர்க்கரையை மெதுவாக புழக்கத்தில் வெளியிட வழிவகுக்கும்

b. அதிக க்ளைசெமிக் லோட் உணவுகள் சர்க்கரையை மெதுவாக புழக்கத்தில் வெளியிட வழிவகுக்கும்

c. குறைந்த க்ளைசெமிக் இண்டெக்ஸ் உணவுகள் சர்க்கரையை மெதுவாக புழக்கத்தில் விடுவதற்கு வழிவகுக்கும்

d. குறைந்த கிளைசெமிக் சுமை கொண்ட உணவுகள் சர்க்கரையை மெதுவாக புழக்கத்தில் வெளியிட வழிவகுக்கும்

e. பி மற்றும் சி

18. பின்வரும் விருப்பங்களில் எது.்.கள் கொலஸ்ட்ரால் அளவைக் குறைக்க உதவும்?

a. நிறைவுற்ற கொழுப்பு அமிலங்கள்
b. நிறைவுறா கொழுப்பு அமிலங்கள்
c. ஒமேகா-3 கொழுப்பு அமிலங்கள்
d. ஒமேகா-6 கொழுப்பு அமிலங்கள்
e. மோனோசாச்சுரேட்டட் கொழுப்பு அமிலம்
f. பாலிஅன்சாச்சுரேட்டட் கொழுப்பு அமிலங்கள்

19. பின்வரும் கூற்றுகளில் எது சரியானது?

a. பல்வேறு சமூக ஆய்வுகளின் சான்றுகள் நவீன சமுதாயத்தில் உட்கார்ந்த வாழ்க்கை முறை அதிகரித்து வருவதை உறுதிப்படுத்துகிறது.
b. வேலை அர்ப்பணிப்பு மற்றும் ஓய்வு நேரமின்மை ஆகியவை உடல் செயல்பாடு கடமைகளில் ஈடுபடுவதற்கு மிகவும் பொதுவான தடைகள் மற்றும் ஓய்வு நேரமின்மை ஆகியவை அடையாளம் காணப்படுகின்றன.
c. இவை இரண்டும்

20. பின்வரும் நோய்களில் எது உட்கார்ந்த வாழ்க்கை முறையுடன் தொடர்புடையது?

a. பெருங்குடல் புற்றுநோய்
b. பக்கவாதம்
c. இருதய நோய்
d. மேலே உள்ள அனைத்தும்

21. இருதய ஆரோக்கியத்தை மேம்படுத்தும் உடற்பயிற்சி வகை?

a. நெகிழ்வுத்தன்மை
b. ஏரோபிக் உடற்பயிற்சி
c. வலிமை பயிற்சி
d. விளையாட்டு

22. இது ஒரு வகையான உடற்பயிற்சி

a. நடைபயிற்சி

b. நீச்சல்

c. பைக்கிங்

d. மேலே உள்ள அனைத்தும்

23. ஒரு சராசரி வயது வந்தவருக்கு தினமும் பரிந்துரைக்கப்படும் தண்ணீர்,

a. ஒரு நாளைக்கு 0.5லி

b. ஒரு நாளைக்கு 0.75லி

c. ஒரு நாளைக்கு 1 எல்

d. ஒரு நாளைக்கு 1.5 - 2 லிட்டர்

e. ஒரு நாளைக்கு 4-5 எல்

24. புரதத்தின் ஆதாரங்களாக இறைச்சி, மீன் மற்றும் கோழிக்கு மாற்றாக சைவ உணவுகள்:

a. சோளம்

b. கொட்டைகள்

c. பருப்பு வகைகள்

d. பூசணிக்காய்

e. மேலே உள்ள அனைத்தும்

Chapter 14

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Annex I : Food (Colour Coding for Sugar Levels) Regulations 2016

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The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 1965/18 - 2016 මැයි මස 03 වැනි අඟහරුවාදා - 2016.05.03

No. 1965/18 - TUESDAY, MAY 03, 2016

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

L. D. B. 11/80(29).

FOOD ACT, No. 26 OF 1980

REGULATIONS made by the Minister of Health, Nutrition and Indigenous Medicine under Section 32 of the Food Act, No. 26 of 1980, in consultation with the Food Advisory Committee.

Minister of Health, Nutrition and
Indigenous Medicine.

Colombo,
22nd April 2016.

Regulations

1. These regulations may be cited as the Food (Colour Coding for Sugar levels) Regulations 2016 and shall come into force from 01st August 2016.

2. No person shall sell, offer for sale, distribute or advertise any food specified in the Schedule I hereto unless such food is labelled in the manner as specified in regulation 3.

3. The container or the package which contains such food shall have a label which shall adhere to the following -

(*a*) a numerical description of the sugar content as specified in Column 1 of the Schedule II ;

(*b*) a description of the relative sugar level as specified in Column 2 of the Schedule II ;

(*c*) a colour code displayed as specified in Column 3 of the Schedule II and as illustrated in Schedule III ;

(*d*) the diameter of the inner circle in the logo shown under Schedule III which specifies the colour relating to particular sugar level, shall not be less than 1 cm ;

(*e*) description in Schedule III shall comprise font size with the minimum height of 1.5mm and shall be legible.

4. The description of the sugar level shall be indicated as high sugar, medium sugar or low sugar as the case may be in all three languages.

5. In these regulations, unless the context otherwise requires ;

"Sugar" means all monosaccharides and disaccharides in food ;

"carbonated beverages" means a non-alcoholic water based beverage containing dissolved carbon dioxide and sugar and other permitted ingredients ;

"ready to serve beverages" means a fruit drink intended for consumption without dilution and prepared from unfermented but fermentable fruit juice or puree or concentrate with or without some of the pulp and containing any soluble sweetener and portable water ;

"fruit nectar" means unfermented but fermentable product obtained by adding water with or without the addition of sugars, honey, treacle, and/or syrups and/or sweeteners and other permitted ingredients to fruit juice ;

"fruit juices" means the unfermented but fermentable liquid obtained from the edible part of appropriately mature and fresh fruit maintained in sound condition by suitable means.

SCHEDULE I

Regulation 2

Carbonated beverages
Ready to serve beverages other than milk based products
Fruit Nectar
Fruit Juices

SCHEDULE II

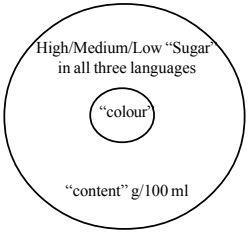
Regulation 3

Sugar content for the Colour Coding

Column 1 *Sugar content* *(per 100 ml of drink)*	*Column 2* *Relative Sugar Level*	*Column 3* *Colour Code*
More than 11g 2g to 11g Less than 2g	High Sugar Medium Sugar Low Sugar	Red Amber Green

SCHEDULE III Regulation 3 and 4

Logo



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Annex II : Food (Colour Coding for Salt, Sugar and Fat) Regulation 2019

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The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 2119/3 - 2019 අප්‍රේල් මස 17 වැනි බදාදා - 2019.04.17

No. 2119/3 - WEDNESDAY APRIL 17, 2019

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PART I : SECTION (I) — GENERAL

Government Notifications

L.D.B. 11/80(29)

FOOD ACT, No. 26 OF 1980

REGULATIONS made by the Minister of Health, Nutrition and Indigenous Medicine, under Section 32 of the Food Act, No. 26 of 1980, in consultation with the Food Advisory Committee.

Dr. Rajitha Senarathna,
Minister of Health, Nutrition and Indigenous Medicine.

Colombo,
16th April, 2019.

Regulations

1. These Regulations may be cited as the Food (Colour Coding for Sugar, Salt and Fat) Regulations 2019 and shall come into operation on 1st of June 2019.

2. (1) No person shall package, sell, expose for sale, or advertise any solid or semi-solid food which contains

(a) an amount of sugar specified in Part A of the Schedule I hereto ; or

(b) an amount of salt specified in Part B of the Schedule I hereto ; or

(c) an amount of fat specified in Part C of the Schedule I hereto,

unless such food is labeled in the manner as specified in these regulations.

1A - PG 4488 — 3017 (04/2019)

This Gazette Extraordinary can be downloaded from www.documents.gov.lk

(2) Where any solid or semi-solid food has to be prepared or reconstituted before consumption as per the directions specified in the label of the container of such solid or semi-solid food and such food upon being so prepared or reconstituted is still in solid or semi-solid state contains an amount of sugar, salt or fat specified in Schedule I hereto-

(a) in the case of locally manufactured solid or semi-solid food, the container of such food shall be labeled in the manner as specified in these regulations as applicable ;

(b) in the case of solid or semi-solid food which has been imported, a label made in accordance with these regulations shall be affixed to the container of such food.

3. Where any solid or semi-solid food contains the amount of sugar specifed in Column I of Part A of Schedule I hereto, the container or the package which contains such food shall have a logo which shall adhere to the following :-

(a) the height and the width of the logo as illustrated in Column III of Part A of Schedule I hereto shall not be less than 2 cm and 1 cm respectively ;

(b) the word "sugar", shall be displayed within the logo in Sinhala, Tamil and English languages respectively in bold white and shall be of minimum 2 mm font size, as illustrated in Column III of Part A of Schedule I hereto ;

(c) a numeric description of the sugar content in such food shall be within a white box as illustrated in Column III of Part A of Schedule I hereto and shall be of minimum 1.5 mm font size in bold black ; and

(d) the colour code of the logo shall be as specified in Column II of Part A of Schedule I hereto.

4. Where any solid or semi solid food contains the amount of salt specified in Column I of Part B of Schedule I hereto, the container or the package which contains such food shall have a logo which shall adhere to the following :-

(a) the height and the width of the logo as illustrated in Column III of Part B of Schedule I hereto shall not be less than 2 cm and 1 cm respectively ;

(b) the word "salt", shall be displayed within the logo in Sinhala, Tamil and English languages respectively in bold white and shall be of minimum 2 mm font size, as illustrated in Column III of Part B of Schedule I hereto ;

(c) a numeric description of the salt content in such food shall be within a white box as illustrated in Column III of Part B of Schedule I hereto and shall be of minimum 1.5 mm font size in bold black ; and

(d) the colour code of the logo shall be as specified in Column II of Part B of Schedule I hereto.

5. Where any solid or semi solid food contains the amount of fat specified in Column I of Part C of Schedule I hereto, the container or the package which contains such food shall have a logo which shall adhere to the following :-

(a) the height and the width of the logo as illustrated in Column III of Part C of Schedule I hereto shall not be less than 2 cm and 1 cm respectively ;

(b) the word "fat", shall be displayed within the logo in Sinhala, Tamil and English languages respectively in bold white and shall be of minimum 2 mm font size, as illustrated in Column III of Part C of Schedule I hereto ;

(c) a numeric description of the fat content in such food shall be within a white box as illustrated in Column III of Part C of Schedule I hereto and shall be of minimum 1.5 mm font size in bold black ; and

(d) the colour code of the logo shall be as specified in Column II of Part C of Schedule I hereto.

6. The logos shall be displayed in the main panel of the label of the container or package which contains such food in close proximity to each other as shown in Schedule II hereto :

Provided however, where the relevant logos cover more than 25% of surface area of the main panel of the container or package of such food, such logos shall be displayed in the dispenser pack.

7. The provisions of these regulations shall not apply to :-

(a) any primary agricultural product ;

(b) spices, condiments, curry mixtures or flavoring mixtures sold in separate pack ;

(c) any food for special dietary uses or where the label prominently displays that it is to be used under medical guidance or on the recommendation of a Medical Practitioner ;

(d) any package of food where the food is of the nature, quality, quantity, origin or brand requested by the purchaser and is weighed, counted or measured in the presence of the purchaser ;

(e) bulk packs, where the retail packs contained therein complies with these regulations ;

(f) infant milk formulae ;

(g) Products packaged solely for export purpose only ;

(h) any solid or semi-solid food upon preparation or reconstitution as per directions of the label of the container of such food where such food becomes a liquid at consumption level ; or

(i) any solid or semi-solid food manufactured before, the date on which these regulations come into operation.

8. In these regulations, unless the contex otherwise requires :-

"amber" means R255, G195 and B9 in Red, Green, Blue colour system (RGB) or equivalent ;

"fat" means total fatty acid, in the form of triglycerides ;

"green" means G195 in Red, Green, Blue colour system (RGB) or equivalent ;

"main panel" that also known as "front of pack" means the part of the lable which is most likely to be displayed, presented, shown or examined under customery conditions of display for retail sale ;

"primary agricultural products" includes cereals, pulses, vegetables, roots and tubers, fruits, salt, sugar, meat, fish ;

"red" means R230 in Red, Green, Blue colour system (RGB) or equivalent ;

"salt" means total salt contained in food, in the form of Sodium Chloride (NaCl) ; and

"sugar" means total sugar contained in food, in the form of monosaccharides and disaccharides ;

SCHEDULE I

(Reference to regulations 2, 3, 4, and 5)

PART A

Total Sugar contains in Solid or Semi-solid Food

Column I *Sugar content* *(per 100g)*	*Column II* *Colour code of the* *Logo*	*Column III* *Logo*
More than 22g	Red	
5g to 22g	Amber	
Less than 5g	Green	

PART B

Total Salt contains in Solid or Semi-solid Food

Column I *Salt content* *(per 100g)*	*Column II* *Colour code of the* *Logo*	*Column III* *Logo*
More than 1.25g	Red	
0.25g to 1.25g	Amber	
Less than 0.25g	Green	

Part C

Total Fat contains in Solid or Semi-solid Food

Column I *fat content* *(per 100g)*	*Column II* *Colour code of the* *Logo*	*Column III* *Logo*
More than 17.5g	Red	
3g to 17.5g	Amber	
Less than 3g	Green	

Schedule II

Reference to Regulations 6

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24-HOUR RECALL

Date (DD/MM/YYYY: ☐☐/☐☐/☐☐☐☐

Name of the HH Head : _____ Cluster:---------- HH No :----------

Please describe anything that your family members ate yesterday during the day or night, whether at home or outside the home

Meal Time	Meal and Preparation method	Ingredients	Food Code	Quantity of ingredients (in household measures)	Quantity of ingredients (in metric measures g/ml)	Cooked /prepared amount (in household measures)	Amount consumed by all family members (in household measures) Line number of the family member from the HH list 1 2 3 4 5 6 7 8								Total amount in household measures	Amount consumed by all family members (raw equivalent in metric /g)

DIETARY SURVEY - WEIGHMENT

Name of the HH Head : _____ **Cluster:**---------- **HH No :**----------

Record all recipes and ingredient use in metric measurements as well as household measurements. (raw ingredients should be cleaned and ready for the pot)

							To be filed in following visit	
Date & Meal Time	Meal and Preparation method	Ingredients	Food Code	Quantity of ingredients (in household measures)	Quantity of ingredients (in metric measures g/ml) A	Cooked /prepared amount (in household measures) B	Total amount consumed by the family member in household measures C	Amount consumed by all family members (raw equivalent in metric /g) D

D =A/B*C

Annex V : Medical Nutrition Units in Sri Lanka

01	NHSL	27	SBSCH PERADENIYA
02	DMH	28	DGH MATALE
03	LRH	29	BH GAMPOLA
04	CSHW	30	DGH NUWARAELIYA
05	NINDT	31	TH KURUNEGALA
06	NIMH	32	TH KULIYAPITIYA
07	CSTH	33	DGH CHILAW
08	CNTH	34	TH KARAPITIYA
09	APEKSHA HOSPITAL	35	TH MAHAMODARA
10	IDH	36	DGH MATARA
11	CEBH	37	BH ELPITIYA
12	TH RAGAMA	38	BH BALAPITIYA
13	BH HOMAGAMA	39	DGH HAMBANTOTA
14	BH AWISSAWELLA	40	TH ANURADAPURA
15	DGH GAMPAHA	41	DGH POLONNARUWA
16	DGH NEGAMBO	42	TH KEGALLE
17	DGH KALUTHARA	43	TH RATHNAPURA
18	BH HORANA	44	BH KARAWANALLA
19	BH PANADURA	45	BH EMBILIPITIYA
21	SJGH	46	TH JAFFNA
22	NHRD - WELISARA	47	DGH TRINCOMALEE
23	KDU (WERAHARA)	48	DGH AMPARA
24	BH WATHUPITIWALA	49	BH KALMUNAI
25	NH KANDY	50	DGH BATICALOA
26	TH PERADENIYA	51	PGH BADULLA

Annex VI : Sri Lanka STEPS Survey 2021- Fact sheet

Sri Lanka STEPS Survey 2021
Fact Sheet

The STEPS survey of noncommunicable disease (NCD) risk factors was carried out in April, November, and December 2021 in Sri Lanka. NCD Bureau, Ministry of Health and Department of Census and Statistics (DCS) has conducted the survey with the participation of staff of the provincial public health, Medical Research Institute and Department of Census and Statistics. This was a population-based survey of adults aged 18-69 and the survey was carried out in three steps. Sociodemographic and behavioural data were collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. Biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3. A multi-stage stratified cluster sample design was used to select the sample for that age range. A total of 6267 adults participated in the survey. The overall response (step 1) rate was 81%, step 2 response rate was 73% and step 3 response rate was 61%. This survey is usually carried out every five years and the repeat survey will be planned in 2026.

Results for adults aged 18-69 years (incl. 95% CI)	Both Sexes	Males	Females
Step 1 Tobacco Use			
Percentage who currently smoke tobacco	14.1% (13.0– 15.3)	30.2% (27.9– 32.4)	0.2% (0.0– 0.4)
Percentage who currently smoke tobacco daily	10.0% (9.0-11.0)	21.3% (19.3-23.4)	0.1% (0.0-0.2)
Percentage who currently use smokeless tobacco	17.5% (16.2-18.8)	30.3% (28.0-32.6)	6.4% (5.4-7.3)
Percentage who currently use smokeless tobacco daily	10.9% (9.9-11.9)	19.7% (17.7-21.6)	3.2% (2.5-3.9)
Percentage who currently use tobacco (smoked/smokeless)	26.2% (24.7-27.7)	48.9% (46.4-51.5)	6.5% (5.5-7.4)
Percentage who currently use tobacco daily (smoked/smokeless)	18.5% (17.3-19.8)	36.0% (33.6-38.4)	3.4% (2.6-4.1)
Percentage of Cotinine 200 test positive (urine nicotine)	27.3% (25.6-28.9)	47.6% (44.9-50.3)	9.9% (8.5-11.4)
For those who smoke tobacco daily			
Average age started smoking (years)	20.6 (20.0-21.1)	20.5 (19.9-21.0)	--
Percentage of daily smokers smoking manufactured cigarettes	70.5% (65.7-75.3)	70.9% (66.1-75.7)	--
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	3.7 (3.4-4.1)	3.7 (3.4-4.1)	--
Step 1 Alcohol Consumption			
Percentage who are lifetime abstainers	65.1% (63.4-66.7)	34.2% (31.7-36.6)	91.9% (90.7-93.1)
Percentage who are past 12-month abstainers	8.2% (7.4-9.1)	11.5% (10.1-12.9)	5.4% (4.4-6.3)
Percentage who currently drink alcohol (drank alcohol in the past 30 days)	20.7% (19.5-22.0)	43.3% (40.9-45.6)	1.2% (0.7-1.6)
Percentage who engage in heavy episodic drinking (6 or more drinks on any occasion in the past 30 days)	7.1% (6.2-7.9)	15.1% (13.3-16.8)	0.3% (0.1-0.5)
Step 1 Diet			
Mean number of days fruit consumed in a typical week	3.4 (3.4-3.5)	3.4 (3.3-3.5)	3.5 (3.4-3.6)
Mean number of servings of fruit consumed on average per day	1.2 (1.2-1.3)	1.2 (1.2-1.3)	1.3 (1.2-1.3)
Mean number of days vegetables consumed in a typical week	6.5 (6.5-6.6)	6.5 (6.4-6.5)	6.6 (6.5-6.6)
Mean number of servings of vegetables consumed on average per day	3.3 (3.2-3.5)	3.3 (3.2-3.4)	3.4 (3.2-3.5)
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	67.8% (66.1-69.6)	68.1% (65.7-70.5)	67.6% (65.5-69.7)
Percentage who always or often add salt or salty sauce to their food before eating or as they are eating	3.5% (2.8-4.2)	3.4% (2.6-4.3)	3.6% (2.8-4.4)
Percentage who always or often eat processed foods high in salt	8.2% (7.2-9.2)	8.1% (6.7-9.4)	8.3% (7.2-9.5)

Mean intake of salt per day (in grams) (Levels of sodium and creatinine in spot urine samples are used in STEPS to estimate population 24 hour salt intake, using the Kawasaki equation)	14.2 (14.0-14.4)	15.1 (14.8-15.4)	13.5 (13.3-13.7)
Step 1 Physical Activity			
Percentage with insufficient physical activity (defined as < 150 minutes of moderate-intensity activity per week, or equivalent) *	34.8% (33.1-36.4)	24.2% (22.1-26.3)	43.9% (41.8-46.0)
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)	64.3 (2.9-257.1)	154.3 (21.4-385.7)	30.0 (0.0-130.0)
Percentage not engaging in vigorous activity	73.4% (71.8-74.9)	55.4% (53.0-57.9)	88.9% (87.6-90.2)
Percentage with no recreational physical activities	87.2% (86.1-88.4)	82.2% (80.2-84.2)	91.6% (90.5-92.7)

* For complete definitions of insufficient physical activity, refer to the GPAQ Analysis Guide (http://www.who.int/chp/steps/GPAQ/en/index.html) or to the WHO Global recommendations on physical activity for health (http://www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html)

-- : Numbers insufficient to make a meaningful presentation

Sri Lanka STEPS Survey 2021
Fact Sheet

Results for adults aged 18-69 years (incl. 95% CI)	Both Sexes	Males	Females
Step 1 Cervical and Breast Cancer Screening			
Percentage of women aged 30-49 years who have ever had a screening test for cervical cancer			40.2% (37.3-43.1)
Percentage of women aged 35-45 years who have ever had a screening test for cervical cancer			51.7% (48.0-55.4)
Percentage of women aged 30-49 years who have ever done a breast self-examination to detect any lumps in the breast			36.6% (33.9-39.2)
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m^2)	24.2 (24.0-24.3)	23.1 (22.9-23.3)	25.1 (24.8-25.3)
Percentage who are overweight (BMI ≥ 25 kg/m^2)	39.4% (37.9-40.9)	30.0% (27.7-32.3)	47.6% (45.5-49.6)
Percentage who are obese (BMI ≥ 30 kg/m^2)	11.0% (10.0-12.0)	6.3% (5.1-7.4)	15.2% (13.6-16.7)
Average waist circumference (cm)		85.3 (84.6-86.0)	86.4 (85.8-87.1)
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP	128.5 (127.9-129.2)	130.3 (129.4-131.3)	127.0 (126.1-127.9)
Mean diastolic blood pressure - DBP (mmHg), including those currently on medication for raised BP	80.5 (80.1-81.0)	81.9 (81.3-82.6)	79.3 (78.8-79.9)
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	34.8% (33.3-36.3)	35.8% (33.4-38.2)	34.0% (32.0-35.9)
Percentage who were already diagnosed with hypertension **among entire population (self-reported)**	18.6% (17.4-19.7)	15.1% (13.5-16.7)	21.6% 20.1-23.2)
Percentage **newly detected** with raised BP among those with **raised blood pressure or currently on medication** for raised BP	54.7% (52.0-57.4)	62.0% (58.1-65.8)	48.1% (44.7-51.5)
Percentage having blood pressure **controlled among those with raised blood pressure or currently on medication** for raised BP	14.1% (12.3-15.9)	10.7% (8.4-13.0)	17.3% (14.7-19.9)
Percentage having blood pressure **controlled among those who were taking treatment** for raised blood pressure**.**	39.1% (35.2-43.0)	37.2% (30.7-43.7)	40.3% (35.3-45.4)
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP) who are not currently on medication for raised BP.	63.9% (61.4-66.4)	71.2% (67.7-74.7)	57.2% (53.9-60.5)
Step 3 Biochemical Measurement			
Mean fasting blood glucose, including those currently on medication for raised blood glucose [mg/dl]	104.0 (102.4-105.6)	103.1 (100.9-105.4)	104.8 (102.7-106.8)
Percentage with impaired fasting glycaemia as defined below • plasma venous value ≥6.1 mmol/L (110 mg/dl) and <7.0 mmol/L (126 mg/dl) • capillary whole blood value ≥5.6 mmol/L (100 mg/dl) and <6.1 mmol/L (110 mg/dl)	13.0% (11.7-14.2)	12.8% (10.9-14.6)	13.1% (11.6-14.7)

Percentage with raised Fasting Blood Glucose Known and newly reported: Includes respondents aged 18-69 years having plasma venous value ≥ 126 mg/dl or currently on medication for raised blood glucose	**14.6% (13.5-15.8)**	**14.5% (12.7-16.4)**	**14.7% (13.2-16.2)**
Percentage who were already diagnosed with diabetes among entire population **(self-reported)**	**13.9% (12.9- 14.8)**	**13.4% (11.9- 14.9)**	**14.3% (13.1- 15.5)**
Percentage newly detected with raised fasting blood sugar among those with raised blood sugar or currently on medication for raised blood sugar	**38.4% (34.1-42.7)**	**39.8% (33.0-46.6)**	**37.2% (31.9-42.4)**
Percentage not taking treatment for raised blood sugar among those with raised Blood sugar or currently on medication for raised blood sugar	**49.1% (44.7-53.5)**	**53.2% (46.6-59.8)**	**45.6% (40.2-51.1)**
Percentage of respondents with comorbidity (raised blood pressure and blood glucose)	**8.6% (7.7-9.6)**	**8.5% (6.9-10.0)**	**8.7% (7.5-9.9)**
Mean total blood cholesterol, including those currently on medication for raised cholesterol [mg/dl]	**187.2 (185.6- 188.8)**	**182.0 (179.8- 184.3)**	**191.7 (189.7- 193.7)**
Percentage with raised total cholesterol (≥ 5.0 mmol/L or ≥ 190 mg/dl or currently on medication for raised cholesterol)	**48.7% (46.8- 50.6)**	**42.7% (40.0- 45.4)**	**54.0% (51.6- 56.4)**
Percentage with raised total cholesterol (≥ 6.2 mmol/L or ≥ 240 mg/dl or currently on medication for raised cholesterol): According to Sri Lanka guideline, cut off value of raised total cholesterol is 240 mg/dl.	**19.0% (17.5-20.4)**	**15.6% (13.6-17.7)**	**21.8% (20.0-23.7)**
Cardiovascular disease (CVD) risk			
Percentage aged 40-69 years with a 10-year CVD risk ≥ 20%, or with existing CVD**	**14.2% (12.8- 15.8)**	**16.9% (14.6- 19.6)**	**11.8% (10.1- 13.8)**
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • insufficient physical activity • overweight (BMI ≥ 25 kg/m^2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with none of the above risk factors	**8.6% (7.6- 9.6)**	**9.5% (787- 11.1)**	**7.8% (6.7- 9.0)**
Percentage with three or more of the above risk factors, aged 18 to 44 years	**18.2% (16.5- 19.9)**	**18.9% (16.1- 21.6)**	**17.6% (15.6- 19.7)**
Percentage with three or more of the above risk factors, aged 45 to 69 years	**36.3% (34.1- 38.5)**	**31.4% (28.1- 34.7)**	**40.5% (37.7- 43.2)**
Percentage with three or more of the above risk factors, aged 18 to 69 years	**26.5% (25.1- 28.0)**	**24.6% (22.4- 26.7)**	**28.2% (26.4- 30.0)**

** A 10-year CVD risk of ≥20% is defined according to age, sex, blood pressure, smoking status (current smokers), total cholesterol, and previously diagnosed diabetes.

For additional information, please contact: STEPS Survey Coordinator, Dr. S.C. Wickramasinghe, DDG (Non-Communicable Diseases), Ministry of Health, scwickrama@gmail.com