Dietary Guidelines
For Maltese Adults

Information for Professionals involved in Nutrition Education

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Executive Summary

Cardiovascular diseases, obesity, type 2 diabetes, some types of cancer, osteoporosis, gastrointestinal diseases and dental caries have all been linked to our diet. The traditional Maltese cuisine is generally in conformity with the Mediterranean diet, however several international and national food surveys show that the food patterns of the Maltese people have drifted away from this type of diet to the extent that a larger proportion of our food intake consists of foods high in saturated and trans fat, refined carbohydrates/sugars and/or added salt (HFSS foods).

In the mid-1980s, the Department of Health had established the first Nutrient Goals and food based dietary guidelines (FBDGs) for the Maltese people. In addition, the 'Maltese Food Pyramid' Guide was developed as a tool to inform, educate and guide the general public on how to adhere and consume a healthy balanced diet – the Mediterranean way! Subsequent amendments to the food pyramid guide throughout the years were made, but in general, these guidelines always remained faithful to the Mediterranean Diet.

Over these past decades Malta underwent several changes including several drastic changes in the socio-cultural, economic and physical environments. These changes have been acknowledged by the 2014 'Food and Nutrition Policy and Action Plan for Malta (2015-2020)'; which recommended a review of these food-based dietary guidelines (FBDGs) in order to propose guidance to the public and health professionals on the optimal diet to address the health risks posed by obesity, physical inactivity and chronic non-communicable diseases.

The Healthy Plate – Dietary Guidelines for Maltese Adults has been drafted by a national multidisciplinary group of experts with the aim of providing better advice to the Maltese public on how to consume a healthier diet. It complements the food pyramid guide that has been used locally in the past years, and is based on the best available scientific evidence on nutrition to date, whilst reflecting cultural habits. These guidelines may be revised to reflect dietary evidence collected from the First National Food Consumption Survey once it is completed.

The main aim of these new FBDGs and accompanying 'Healthy Plate' model is to encourage people to embrace health-promoting patterns of eating, drinking and physical activity – the Mediterranean way. The 'Healthy Plate' guide contains six main food groups and other health tips. These guidelines are targeted towards Maltese adults aged 19-65 years who are encouraged to modify their daily diet to reflect the proportions indicated by the graphical 'healthy plate' guide.

To achieve this balanced diet and lifestyle, Maltese adults need to:

- increase their intake of coloured vegetables and fruit, wholegrain/wholemeal cereals, legumes, nuts, seeds, fish, herbs and spices, and water;
- decrease their consumption of nutrient-poor, refined HFSS foods;
- decrease sitting time whilst increasing their physical activity levels

People diagnosed with specific chronic diseases may have different dietary needs and should seek additional nutritional advice from professionals.

The latest scientific evidence shows the strong correlation between the excess consumption of red meat, particularly preserved meat and an increased risk of colorectal cancer. As regards the intake of alcohol and wine, recent evidence shows that a 'safe limit' intake of alcohol does not exist. As regards free sugars, WHO recommends to keep free sugar intake to less than 10 per cent of total energy intake throughout the life course in order to reduce the risk of non communicable diseases in adults and children. It also recommends further reduced intakes for maximum health benefits.

Section 7.0 (p.23-24) gives an overview of the serving sizes that can be consumed for each of the six food groups. The food serving sizes refer to a 2000 Calorie diet.

The recommendations on serving sizes are grouped to show which products are to be consumed on a daily, weekly and occasionally (and only if desired) basis. The ultimate goal of these Guidelines is to improve the Nation's health status by offering simple understandable practical tips on making the best choices.

Abbreviations

BHF	British Heart Foundation
CDC	Centers for Disease Control and Prevention, U.S.A.
EHES	European Health Examination Survey
EHIS	European Health Interview Survey
FBDGs	Food Based Dietary Guidelines
HBSC	Health Behaviour in School Aged Children Study
HDL	High Density Lipoprotein
HFSS	Foods and drink high in fat, sugar and salt
HIS	Health Interview Survey
LDL	Low Density Lipoprotein
NCD	Non-communicable Diseases
NHS	National Health Service
WHO	World Health Organisation

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1.0 Background

Food and diet have a vital role to play in health promotion and the prevention of chronic diseases. These include cardiovascular diseases, obesity, type 2 diabetes, some types of cancer, osteoporosis, dental caries as well as gastrointestinal problems (CDC, 2015). Often these conditions are linked to an excessive intake of foods high in saturated and trans fat, refined sugars and/or salt (HFSS); together with an inadequate intake of foods such as legumes, vegetables, wholegrain cereals and fruit; known to provide vitamins and minerals, dietary fibre and protective phytonutrients (British Heart Foundation, 2015).

Food survey studies done internationally and locally since the 1990's (Bellizzi, 1993; Tessier and Gerber, 2005) had shown that food patterns had drifted away from the traditional Mediterranean diet; with a decreased consumption of vegetables and fruit, legumes and wholemeal and wholegrain cereals, and a coexisting shift towards an increased consumption of energy-dense foods and relatively nutrient-poor, HFSS foods (Department of Health, 1990). This is evident in many countries in the Mediterranean region (da Silva et al, 2009, Vareiro et al, 2009 and Belahsen, 2014)

Changes in the socio-cultural, economic and physical environments since the establishment of the 1990 Malta Food and Nutrition Policy (HIS Malta, 2003), have on the one hand helped to increase the Maltese people's awareness of the need to choose a healthier diet, but have also been a hurdle to the Maltese people from fully achieving the policy-stated dietary guidelines and nutrient goals.

The 2015-2020 Malta Food and Nutrition Policy and Action Plan has taken into account these environmental changes. The new Food and Nutrition Policy and Action Plan for Malta, 2015-2020 (Health Promotion and Disease Prevention Directorate, Parliamentary Secretariat for Health, 2014) also calls for a review of the food-based dietary guidelines (FBDGs) in order to address the risks for current concerns of physical inactivity, obesity and chronic diseases .

2.0 Nutrient Goals versus Food Based Dietary Guidelines

The first time *Nutrient Goals* were set for the Maltese people was back in the mid-1980s (Department of Health, 1990). To facilitate adherence to the nutrient goals, the Maltese Government also issued its food-based dietary guidelines (FBDGs) to help people understand how they could eat a healthy, balanced diet to meet their nutritional needs.

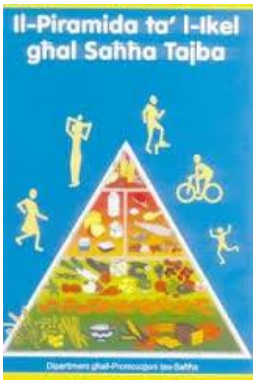
The FBDGs included in the Malta Food and Nutrition Policy (1990) asked for the Maltese people to adopt the following dietary behaviours:

- *'…..consume less fats, sugars, salt and eat more fibre'*
- *'…..Eat less meat, have fish and poultry in preference to beef; substitute high fat dairy products with low fat alternatives; eat fewer eggs and more fresh fruit and vegetables and whole grain products'.*
- *'……alcohol intake should be limited to not more than two units a day'.*

Malta Food and Nutrition Policy (1990)

Subsequent amendments of the above dietary guidelines were issued over the years by the then Health Promotion Department and later updated on a regular basis by the Health Promotion and Disease Prevention Directorate. The FBDGs always remained faithful to the Mediterranean diet with its emphasis on plant foods. An accompanying visual was also developed -- the Maltese Food Pyramid Guide. These dietary guidelines were extensively used in health promotion and health education activities, through various means including the mass media, public health talks and seminars, as well as in written materials. The latter included the publishing of several brochures to promote healthy eating to different audiences, with an emphasis on the promotion of a high intake of plant foods, in particular vegetables and fruit consumption, across the lifespan.

Past local food studies with both adults (HIS, 2003 and EHIS, 2008) and schoolchildren (HBSC, 2002, 2006 and 2010) have indicated a low vegetable consumption and a high consumption of sweets and sugary drinks. Unfortunately, these food studies lack a 'quantifiable' data on food patterns by the Maltese people (Malta Standards Authority, 2010).



The Maltese Food Pyramid Guide (2004)

3.0 The Mediterranean Diet and its Health Benefits

The traditional Mediterranean Diet is the inheritance of exchanges of food, people and culture of countries surrounding the Mediterranean basin that has endured thousands of years. The traditional Mediterranean Diet (from the Greek word *diaita* or a way of life) encompasses more than just food (Willet et al, 1995, Bach-Faig et al, 2011 and Gotsis E. et al., 2015).

The pioneer Seven Countries Study by Ancel Keys (Keys, et al., 1986) as well as other more recent research on the Mediterranean Diet (Willet et al, 1995, Bach-Faig et al, 2011 and Gotsis E. et al., 2015), gave information about the foods frequently consumed in the Mediterranean area and the overall link with health.

Features of the traditional Mediterranean Diet include:

- the use of seasonal, fresh and minimally processed foods so that prepared dishes contain significantly higher amounts of protective nutrients and substances that benefit people's health;
- an abundance of vegetables and fruit(mostly fresh and seasonal); herbs and spices, legumes, cereals and nuts;
- regular and moderate use of olive oil;
- moderate to high amounts of fish and seafood;
- a moderate consumption of eggs and dairy products (mostly yoghurt without added sugars or cheese);
- small amounts of meat;
- appropriate food portion sizes;
- home cooking and sitting around the table, preparing and sharing food in company of family and friends;
- a moderate to vigorous level of physical activity; and
- adequate rest and sleep as part of a balanced lifestyle.

Many traditional Maltese dishes have a number of the above-mentioned qualities and can easily be integrated into a pattern of healthy eating - the Mediterranean way (Cefai & Camilleri,2011).

The Keys et al. (1986) study and recent studies have determined the health benefits associated with the observance to the Mediterranean diet pattern. These health benefits mainly relate to the risk reduction of developing type 2 diabetes, metabolic syndrome, cardiovascular disease, some neuro-degenerative diseases and cancers (Couto et al, 2011, Estruch et al, 2013 and Giacosa et al, 2013) (Kiortis & Simos, 2014) (Sofi, et al., 2010) (Serra-Majem, et al., 2006) (Trichopoulou, et al., 2010) (Boffetta, et al., 2011) (Georgoulis, et al., 2014) and Gotsis et al, 2015).

Worth-noting is the fact that in 2010 the UNESCO (1995 – 2012) included the Mediterranean Diet in the Representative List of intangible Cultural Heritage of Humanity, acknowledging not only its health value but also the special set of traditional characteristics around food production, preparation and consumption in the Mediterranean region.

4.0 Diet-Related Health Problems in Malta

In Malta, non-communicable diseases (NCDs) are responsible for about 82% of deaths. These NCD mortality rates include cardiovascular disease, hypertension, type 2 diabetes and some types of cancers. 38% of all deaths in 2010 were attributed to cardiovascular diseases alone (EHES, 2010).

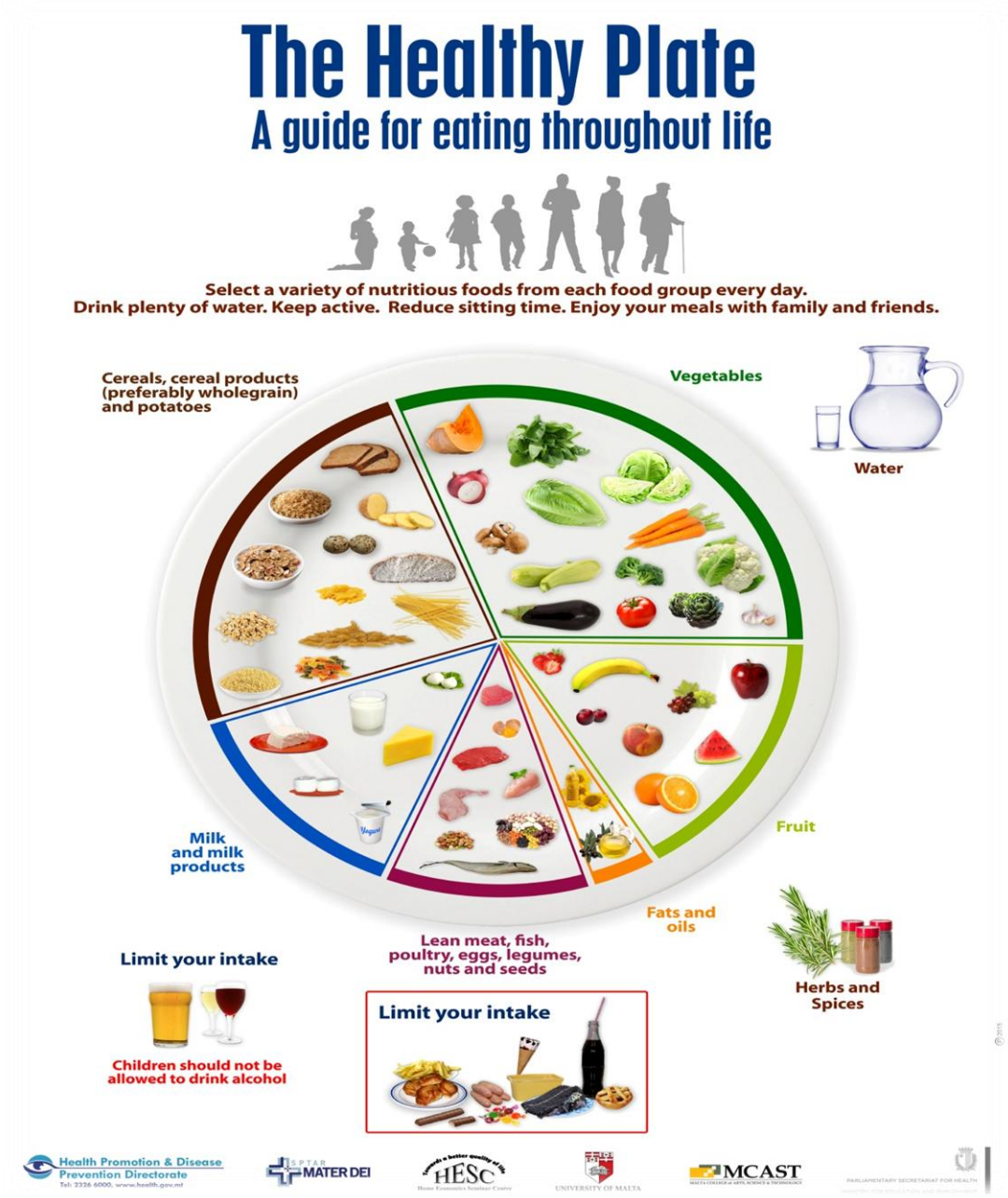
The problem of overweight and obesity among the Maltese though identified back in the 1980s, has remained. Recent figures from among the adult population aged 15 and over, show that 22% were classified as obese and a further 36% as overweight (EHIS, 2008).

Malnutrition, whether under-or over-nutrition, as well as physical inactivity are closely associated with many diet-related NCDs. The Maltese people have several intervention points where to improve their dietary and physical activity patterns. At the same time, several factors in their environment can help to reduce health inequalities through individual dietary changes for improved health.

5.0 The Healthy Plate Guide

What is the Healthy Plate?

The 'Healthy Plate' is being introduced in an effort to make messages on a healthier diet more user-friendly to the general public, to encourage and assist them to consume a nutritious diet throughout their lives.



The process of creating the new 'Healthy Plate' FBDGs and complementary visual included primarily the setting up of an Advisory Group. The Advisory Group was composed of professionals from a wide range of disciplines and expertise. Group meetings facilitated the process that led to the establishment of the 'Healthy Plate' main dietary guidelines and visual.

A review of the scientific literature on diet and health was conducted as part of the process leading to the development of the FBDGs and graphical representation of the 'Healthy Plate' guide for the general Maltese people. The graphical representation of the 'Healthy Plate' guide depicts:

- The six main food groups i.e. *cereal products; vegetables; fruit; milk and milk products; meat and alternative meat products; and, fats and oils* which the Maltese people are encouraged to include in their daily healthy diet in proportions as indicated by the graphical 'Healthy Plate' guide.

- Text guidelines mainly to eat a wide variety of nutrient-dense foods; emphasise wholegrains; increase the intake of water; reduce the intake of salt whilst using herbs and spices to add taste to food and dishes; increase the level of physical activity and limit the intake of energy-dense foods and beverages, including alcohol and energy drinks

The graphical representation of the 'Healthy Plate' with its broad guidelines were piloted during 2014 and 2015 and further amendments made to clear up any potential confusion vis-à-vis the food items and the proportions of each segment (representing the six main food groups) in the visual.

Following the finalisation of the pictorial 'Healthy Plate', sets of dietary guidelines were developed for each of the six food groups graphically represented. These key recommendations were based on the information gained from the literature review and took local and 'traditional' food and food products into consideration. Further fine-tuning of the final wordings of the key recommendations was reached via a consensus approach by the Advisory Group. These key dietary recommendations/guidelines are based on the principle that nutrient needs are met primarily through consumed foods; and include changes to reflect the evolving body of evidence about diet-health relationships in today's lifestyle and environments. They are aimed at healthy Maltese adults aged 19 – 65 years and have been calculated on a diet of about 2000 Calories. The ultimate goal for these new dietary guidelines is to help improve the health of Maltese adults through offering simple, understandable, practical tips.

People living with specific chronic diseases may have different dietary needs and should seek additional nutritional advice from health professionals.

6.0 Healthy Plate Guidelines

a. Select a wide variety of nutritious foods from each of the six food groups every day

No one food except breast milk in the first six months of life (WHO, 2015) can provide all the necessary nutrients for our bodies to function well and keep healthy. Only a diet with a wide variety of foods from each of the food groups can ensure an adequate supply of necessary nutrients known to guard against the development of chronic diseases, whilst promoting health and wellbeing. When choosing from all the different food groups, it is important to create a balanced diet, similar to the visual healthy plate.

Plant foods and food products are typically low in saturated and trans fat and offer various nutrients that protect health (Van Duyn & Pivonka, 2000). It is therefore recommended that a greater quantity of plant-based foods and products (e.g. vegetables, fruits, legumes, and cereal products, preferably wholemeal or wholegrain) be consumed, compared to animal-based foods and products (e.g. lean meat, poultry, and fish, eggs, milk and milk products).

Though the best option, it may not always be possible to consume fresh or homemade foods. In this case, it is recommended to choose food products that are minimally processed whilst containing the least amount of added sugar, saturated and trans fat, as well as salt.

To obtain the necessary nutrients from food whilst keeping within your daily energy intake requirements:

- **Choose nutritious foods from each of the six food groups.**
- **Always check food labels when shopping for food. Choose food products that contain the least amount of salt, sugar, saturated and trans fats (found in hydrogenated or partially-hydrogenated vegetable oils/fats).**
- **Use cooking methods such as steaming, baking, boiling and microwaving rather than frying.**
- **Store cooked food appropriately[1].**

Group 1 and 2: Vegetables and Fruit

Vegetables and fruit are two food groups that are low in energy, fat and salt and packed with vitamins (particularly, vitamin A and C), minerals (particularly potassium), fibre and other protective nutrients (antioxidants and phytochemicals) that guard against the development of certain diseases and conditions (such as type 2 diabetes, cardiovascular diseases, certain cancers and macular degeneration) whilst promoting health and vitality (Van Duyn & Pivonka, 2000).

[1] See 'A note on food safety'

Several studies have shown convincing evidence of the relationship between the consumption of vegetables and fruit and the reduced risk of specific cancers. The consumption of non-starchy vegetables has been shown to be associated with reduced cancer of the mouth, pharynx, larynx, oesophagus and stomach; allium vegetables have been associated with decreased risk of stomach cancer and fruits have been shown to reduce the risk of mouth, pharynx, larynx, oesophagus, lung and stomach cancers (World Cancer Research Fund, 2007).

The World Health Organisation recommends that we consume at least 240g of vegetables and 160g of fruit each day (a total of at least 400g daily) (WHO, 2004). This translates to between three (3) to five (5) servings of vegetables and a maximum of two (2) to (3) servings of fruit daily. Each serving is equivalent to 80g. Fruit should not replace vegetables. ***The idea that eating extra fruit portions will make up for the lack of vegetables is NOT CORRECT!***

Recent data showed that the consumption of vegetables in the Maltese population is low, whereas fruit intake, although slightly higher, still needs to increase (HIS, 2003 & Malta Standards Authority, 2010). Increasing our consumption of vegetables and fruit to the recommended levels or more, especially those of vegetables, may have positive outcomes in managing our risk for excess weight gain as well as chronic diseases such as diabetes and cardiovascular diseases (Van Duyn & Pivonka, 2000).

- **Eat at least three servings (240g) of vegetables and two servings (160g) of fruit each day.**
- **Select from a wide variety of vegetables (best if local and in season):**
    - **Green leafy vegetables e.g. spinach, *rucola*, kale, lettuce, cabbage, broccoli, cauliflower**
    - **Orange vegetables e.g. pumpkin, carrots**
    - **Other vegetables e.g. tomatoes, marrows, aubergines, bell peppers, cucumber**
- **Select from a wide variety of fruit (best if local and in season), but do not over consume,**
- **Choose fresh or frozen vegetables/fruits rather than canned vegetables/fruits. If using canned vegetables/fruits, rinse them well or choose low (or no) salt/sugar added varieties when available.**
- **Choose whole fresh fruits over juice, dried fruit or canned fruit. Dried fruit and fruit juices can damage your teeth. Hence, only one portion is considered as one of the two recommended daily portions of fruit. In addition, they are best consumed during mealtimes to reduce the damage to your teeth.**

Practical tips:

- *Store vegetables and fruit properly to retain their nutrients.*
- *Wash vegetables and fruit before preparing or eating them.*

- *Do not overcook vegetables. Light microwaving, steaming and baking are better methods to boiling to minimise nutrient losses and keep their taste.*
- *Fresh fruit salads, baked or poached fruit are healthier alternatives to other sugary desserts.*
- *Use colourful vegetables and fruit to garnish and decorate your food.*

Group 3: Cereals and cereal products – preferably wholegrain/whole meal

Cereals and cereal products include foods such as wheat, barley, oats, corn and rice, and wholemeal, flour breakfast cereals or other products made from them.

This food group is a significant contributor to the nutrients we need for daily living. It is important for adults to consume at least three servings per day or at least one serving per meal. Each serving is equivalent to 35-40g breakfast cereals; 1 medium/large slice bread; 80-100g (if taken as a main course) of pasta and rice; 60g couscous/bulgar wheat/pasta/rice/quinoa/barley if used as part of a salad. It is important to remember that the number of servings from this food group will depend mainly on one's level of physical activity.

Eating overly-refined cereals and cereal products in excessive amounts on a regular basis, over time will make it difficult to control weight; and raise the risk for diabetes, heart disease, tooth decay and certain cancers (Bhaskaran et al., 2014). Moreover, refined cereal products are often also high in added free sugars, saturated and trans fat and/or salt (sodium) (e.g. biscuits, sweet pastries, fried potato chips).

Dietary fibre found in the unrefined foods in this food group is known to assist in maintaining a healthy digestion and preventing constipation (NHS, 2014). Choosing wholemeal or wholegrain products, such as wholemeal bread/pasta, and wholegrain cereals such as oats, is advised as they contain more nutrients and dietary fibre which in turn contribute to the maintenance of good health. These are concentrated in the germ and bran respectively which are often absent from refined/processed cereals and cereal products (e.g. rice, white bread).

- **Include whole grains such as oats, couscous, quinoa, bulgur wheat, barley, and millet, pasta and rice with meals and snacks.**

Practical tips:

- *Choose wholegrain minimally processed breakfast cereal (low in salt, sugar, saturated and trans fats).*
- *Add oatmeal to your breakfast yoghurt or fruit bowl.*

Group 4: Milk and milk products

Milk and milk products contain a variety of nutrients, such as proteins, vitamins and minerals particularly vitamin D and calcium which are beneficial for good bone and dental health and may prevent osteoporosis (Cashman, 2006). However some milk products may contain high amounts of saturated fat and/or salt (as in cheeses) which are associated with increased risk for certain chronic diseases (American Heart Association, 2000).

By choosing low fat milk, low fat plain yoghurts and lower in fat cheese products, fewer amounts of saturated fat are consumed in the diet.

Some people may not tolerate lactose (found in milk). For these individuals, lactose-free, calcium fortified, lower in fat milk products (at least 100mg of added calcium per 100ml) are available. Cheese contains less amounts of lactose; whereas lactose in yoghurt is partially broken by bacteria, meaning that both yoghurt and cheese should be well tolerated (Chandan, 1997). Soya milk is high in sugar and therefore it is best consumed with meals. (Each serving is equivalent to 250 ml low fat milk or 150mls yoghurt or 30-40g cheese or 45-50g *irkotta/ġbejna*).

- **Choose low fat milk and plain yoghurts instead of full fat. Chopped fresh fruit can be added for taste for better health value.**
- **Choose cheeses that are lower in fat (e.g. cottage cheese, *irkotta*, mozzarella, fresh pasteurised *ġbejniet*).**
- **Consume small portions to minimize your intake of saturated fat and salt.**

Group 5: Lean meat, fish, poultry, eggs, legumes, unsalted nuts and seeds

This group represents the protein foods -- the necessary building blocks for our bodies to keep healthy and during convalescence. These foods are also good sources of vitamins and minerals, particularly vitamin B12, iron, iodine and zinc. But some, such as red meat (beef, lamb, pork) may also be high in saturated fat. To help reduce the amount of saturated fat in our diets, it is wise to opt for lean meat such as rabbit, poultry, fish, legumes (peas, beans and lentils), nuts and seeds. (Ley et al., 2014 & Harvard 2015). Each serving is the equivalent of 100g white meat or 90g red meat or 115g fish or 70g (raw) legumes.

Besides being a good source of protein, iron, iodine and zinc, oily fish (e.g. sardines, salmon, Atlantic Horse Mackerel (*Sawrell*), Chub Mackerel (*Kavalli)*, Amberjack (*Aċċjola*) and Young Amberjack (*Ċervjola))* is also a rich source of omega-3 polyunsaturated fat. This type of fat is necessary for adequate growth and development in children and has an important role to play in the prevention of heart disease (Balk et al., 2006). To obtain a good intake of fish oil, it is advised to consume two servings of fish weekly, preferably

fresh and from a wide variety; one of which should be oily (Mozaffarian and Rimm, 2006). Canned fish drained from added oil or brine can be a useful source of protein.

Legumes, nuts and seeds are alternative sources of protein, iron and zinc. Legumes are also a good source of carbohydrate, dietary fibre and other nutrients. The soluble components of dietary fibre in legumes have been shown to help regulate cholesterol and sugar levels in the blood; whereas the insoluble components help to prevent constipation. The fatty acids found in nuts and seeds have been shown to improve the profile of blood fats, leading to a decrease in the risk for cardiovascular disease (Harvard, 2015).

Red meats (beef, lamb and pork), but in particular, processed meats (e.g. cold cuts, sausages) need to be avoided. As already indicated, they increase the risk of colorectal cancers (WHO, 2015) and raise cholesterol levels in blood which in turn, increases the risk for other diseases.

Eggs offer animal protein and other nutrients such as iron, lutein and zeaxanthin, the latter three found in the yolk. The yolk also contains dietary cholesterol, but recent guidance recommends egg consumption in moderation based on the individual's blood cholesterol status. (American Heart Association, 2000). Eggs can be an alternative to meat as they are relatively cheaper (Hu et al., 1999).

When an individual consumes a well-balanced and healthy diet, this provides enough protein, meaning that individuals on this type of diet rarely, if ever, need protein supplements. The amount of daily recommended protein depends on the age and health of individuals. Vegans can get enough protein by eating a variety of plant proteins to provide the required array of amino acids for good health.

- **Choose lean cuts of meat.**
- **Trim excess fat and remove skin from poultry before cooking.**
- **Eat about two or more servings of fish each week, one of which could be an oily fish. Choose from a wide variety of fresh and seasonal fish.**
- **Include legume-based dishes throughout the week. These could take the form of home-made dips (*bigilla,* red kidney dip and hummus). Salads (bean and chickpea salad), stews, vegetable soups (*minestra)* and home-made *torta tal-ful*.**
- **Limit intake of red meat to less than twice weekly.**
- **Processed meats (e.g. deli luncheon meat and ham, smoked cold meat cuts, canned meat and sausages) are to be eaten only occasionally.**

Practical tips:

- *Choose cooking methods such as steaming, baking or poaching meat, poultry and fish. Limit adding fat and avoid frying.*
- *Opt for lean meats and cuts.*
- *Choose raw or roasted unsalted nuts and seeds instead of fried salted versions.*

- *Eat fruits high in vitamin C and other antioxidants, such as oranges, kiwi, strawberries, blackberries and cherries with meats, fish, poultry and legumes to help iron absorption by the body.*

Group 6: Fats and oils

Fats are a vehicle for carrying fat-soluble vitamins A, D, E, and K and other essential nutrients, such as essential fatty acids, around the body. Yet energy density of food is increased by its fat content. Besides quantity, the type of fat/oil used in the diet matters. One daily serving is equivalent to 1 tablespoon (15mls) of oil/fat, for example olive oil.

There are three main types of fat in foods: saturated fats, unsaturated fats and trans fats. The body needs both saturated and unsaturated fats to function well, but dietary recommendations state that unsaturated fats should be consumed more than saturated fats to help prevent cardiovascular disease. Too much dietary saturated fat is thought to promote the bad cholesterol (LDL) in the blood (BHF, 2015).

Trans fats on the other hand rarely occur naturally and are usually formed during food processing. Trans fats are created when an otherwise naturally unsaturated fat is hydrogenated. The process of hydrogenation solidifies liquid fats and extends the shelf life of foods. Unfortunately, these advantages have been shown to be achieved at the expense of human health. Trans fats have been strongly linked to an increased incidence of coronary heart disease (Mozaffarian et al., 2007).

Trans fats can be found in food products such as some pastries, margarine, biscuits, cakes and other processed foods. Examples of foods high in saturated fat are sausages, hard cheese, butter, cream and block margarine. Unsaturated fats can be found in foods such as avocados, sunflower, peanut and olive oil.

Other types of fat, such as olive and canola oil tend to increase the good (HDL) blood cholesterol and lower the bad (LDL) blood cholesterol and therefore have been included as part of the 'Healthy Plate'. Olive oil which is the principal type of fat/oil used as part of the Mediterranean diet is rich in monounsaturated fat. Other vegetable oils and fats, like those derived from nuts (e.g. almond and walnuts) and seeds (e.g. sesame and flaxseeds), as well as fish oil (refer to section d) are also beneficial to health. (Galli C., 2009)

- **Choose mostly vegetable oils such as olive, canola and sunflower.**
- **Include foods rich in omega-3 fats such as fish, nuts and flaxseeds or their oils.**

Practical tips:

- *Use only small amounts of oil in salads and in cooking.*

- *Opt for home-made healthier pastries (made from recommended fats/oils) rather than ready-made pastries (which may contain high amounts of saturated and trans fat).*
- *Limit intake of fried foods, cream-based sauces, ice-creams and creamy pastries, gateaux and desserts.*

b. Herbs and Spices

Herbs and spices are often used in dishes to give flavour and make food more appealing. Whilst providing variety, this can also help reduce the amount of added salt in food consumed. In addition, herbs and spices offer many health benefits due to the antioxidants known as polyphenols (a type of plant compound) present. Certain herbs and spices tend to reduce inflammation which seems to be involved in the development of chronic diseases such as cardiovascular diseases and some cancers (Ward & Martin, 2010). Indeed, there is evidence directly linking particular herbs with the protection for certain cancers, the most well known being that of garlic protecting against stomach and colorectal cancer (World Cancer Research Fund, 2007).

To give flavour and add palatability to food without adding salt, fats and free sugars[2]:

- **Add herbs and spices**
- **Add garlic and onions, vinegar and/or lemon juice**

c. Drink plenty of water

Available data shows that we drink too many sweetened beverages, such as soft drinks. HIS (2003) showed that more than 21% of the adult population consumes sweetened beverages on a daily basis. Only 68% of the adult population consumes water every day when all adults need to consume a minimum of 1.5 – 2 litres of water every day (Bach-Faig et al, 2011).

Water is necessary for life and our bodies require adequate amounts to stay hydrated and work properly. Although Malta's climate in winter is moderate, summer months get really hot, making it extremely important for Maltese people to drink plenty of water to avoid dehydration. Extra care is needed in the very young, people engaging in physical activity, pregnant and lactating women and older adults. Adequate hydration is important since even mild dehydration may lead to physical and mental tiredness (Zelman, 2008).

Water naturally contains zero calories. If water is consumed regularly, particularly instead of highly sweetened beverages, it can be helpful to reduce risk for dental caries, obesity and diabetes (Hall et al., 2011). Water can be flavoured with natural fruit pieces or herbs, and can also be complemented by sugar-free herbal infusions or low-fat, low-salt broths for variety.

[2] Free Sugars: sugars added to food and beverages by the manufacturer, cook or consumer and sugars naturally present in natural syrups, fruit juices and fruit juice concentrate.

- **Choose plain water as your beverage as often as possible.**
- **Drink adequate amounts (1.5 to 2.0 litres) of fluids, especially water, each day.**
- **Avoid soft and sweetened drinks especially in children.**
- **Increase your water intake in hot weather and with increased activity.**
- **Sugar-free herbal infusions or low-fat, low-salt broths are good alternatives to water.**

d. *Keep active*

The silhouettes at the top of the Healthy Plate are a reminder to keep physically active along the life course. Physical activity is necessary to keep our body and mind working well. Together with healthy dietary habits, physical activity also helps in the prevention of chronic diseases such as type 2 diabetes, osteoporosis, cardiovascular diseases and certain cancers (CDC, 2015).

Together with consumption of a balanced nutrient-dense diet, physical activity helps us maintain a healthy weight. The amount of energy expended depends on the type and duration of the exercise. This and other genetic factors can determine impact on fat and lean tissue and weight loss.

Physical activity also helps to improve blood circulation; relieve tension and stress; and strengthen muscles and joints. However, there are many other psychological and social benefits such as improved mood, self-esteem and self-confidence attributed to physical activity and therefore it cannot be emphasised enough. The greatest benefit for an individual is obtained when the level of physical activity increases from one that is sedentary (CDC, 2015). Further gains can be obtained through additional activity.

- **Be active each day. Engage in at least 30 minutes of moderate intensity physical activity, such as brisk walking, swimming and cycling, on most days of the week.**
- **Be active for longer periods of time if you need to reduce weight or maintain a healthy weight for life.**
- **Reduce the time spent in sedentary activities, such as watching TV, using social media and computer games.**
- **Consult your medical doctor before starting any type of intense physical activity; especially if you have a history of health problems.**

e. Limit your intake of these types of food

i. Saturated and trans fat, sugar and salt

There is a wide availability and accessibility of food and drink products that are high in saturated and trans fats, sugar and salt. Total sugars are made up of free sugars (sugars added to food such as in processed foods) and natural sugars (e.g. lactose in milk and

fructose in fruit and vegetables). The intake of free sugars needs to be kept to minimum throughout the life course. In 2015, based on moderate quality evidence from observational studies of dental caries, the WHO issued guidelines that strongly recommend keeping the intake of free sugars to less than 10 per cent of the total energy intake and makes additional suggestions to further reduce its intake to less than 5 per cent for maximum health benefits (WHO, 2015).

Reading food labels is an easy way to know how much sugar, fat, saturated fat, and salt/sodium are present in the product. The table below can serve as a guide when comparing food products; to identify whether food products contain high, medium or low amounts of sugar, total fat, saturated fat, and salt/sodium[3]. About 75% of the salt we eat is present in our everyday foods like bread and cereals. Too much salt in our diet can be a cause for high blood pressure giving rise to other health problems like cardiovascular diseases and stroke.

	High (per 100g)	Medium (per 100g)	Low (per 100g)
Sugars (total)	Over 10g	Between 5g-10g	5g and below
(for breakfast cereals only)	Over 15g	Between 5g-15g	5g and below
Fat (total)	Over 20g	Between 3g-20g	3g and below
Saturated Fats	Over 5g	Between 1.5g-5g	1.5g and below
Salt	Over 1.5g	Between 0.3-1.5g	0.3g and below
Sodium	Over 0.5g	Between 0.1-0.5g	0.1 and below

- **Avoid adding salt to your food during cooking or at the table.**
- **Limit the consumption of ready-made foods containing high amounts of added sugar, salt/sodium; saturated and hydrogenated or partially-hydrogenated (trans) fats. Remember, the higher the ingredient(s) is in the ingredients list, the larger its amounts in the food product.**
- **Limit consumption of sweets, sugar and fat-rich desserts, ice-cream, cakes, pastries, spreads and other confectionaries. Eat on an occasional basis and as part of the main meal.**
- **Avoid adding sugar to your tea or coffee.**
- **Limit the consumption of processed meat.**

[3] Salt (g) = sodium (g) x 2.5

Become familiar with the following table which gives examples of readymade foods that are high in saturated/trans fat, salt and added sugars and which should be limited.

High in saturated/trans fat	High in Salt	High in Sugar
Bagged savoury snacks Commercial burgers and nuggets Cream and butter Fatty flavourings Fried date-rolls (*imqaret)* Fried food e.g. potato chips Meat pies and other pastries *Pasti tal-krema* *Pastizzi* Processed meats and sausages *Qassatat* *Sfineġ*	Anchovies Crisps and other salty savoury snacks Maltese sausage Processed meats and sausages Salted French fries/Fried potato chips Salted processed fish Salty sundried tomatoes Salty pickled vegetables Soy sauce Stock cubes and salty flavourings	Cakes Chocolate Energy drinks Fruit drinks *Ħelwa tat-Tork* Ice-cream Muffins Nougat *Pasti u pastini* Soft drinks Sweet biscuits Sweet desserts Sweets Turkish delight Tomato and brown sauces

ii. Wine and alcohol

It is not advocated that one should include alcohol as part of a healthy balanced diet. However drinking wine in moderation is considered socially acceptable as part of the Mediterranean culture (Da Silva et al., 2009). Knowing one's limit of what is considered as 'moderate' is crucial. The health and social risks associated with the harmful use of alcohol both to the individual and to others need to be kept in mind so that intake is kept to limited amount and on occasion.

- **Moderate your intake of alcohol, if you choose to drink alcohol.**
- **Avoid drinking completely if you are pregnant or breastfeeding, or if advised by your medical doctor.**
- **Avoid drinking completely if you are driving or operating machinery.**

iii. Energy Drinks

Energy drinks generally have a high sugar and caffeine content as well as other stimulant substances. They can easily contribute to an excess energy intake and tooth decay, and may cause a variety of other problems, such as headaches, restlessness, insomnia, stomach upset, fast heartbeat, and anxiety. (Burrows et al, 2013).

- **Avoid energy drinks**

f. Oral Health

Good oral health is an essential part of general health as its lack may contribute to heart and lung problems, diabetes and stroke. A diet high in sugar will result in poor oral health.

- **Cut down on the amount and frequency of sugary foods and drinks, particularly between meals or within an hour before going to bed.**
- **Plain water or low fat milk are ideal drinks with and between meals.**
- **Brush teeth twice a day, or at least last thing at night and on one other occasion using fluoridated toothpaste.**
- **Visit your dentist regularly.**

Practical tips:

- *If you have something sweet, have it with your meals to minimise damage to the teeth. This can be followed by a small cube of low or medium fat cheese for better oral health.*
- *Limit the consumption of cereal bars. These are often high in sugar content and sticky in nature, increases the risk of tooth decay.*
- *Limit the consumption of natural syrup and dried fruit as they are high in sugar and sticky in nature and increase the risk of tooth decay.*
- *Limit the consumption of commercially produced fruit juice which is high in sugar content and is also acidic.*

g. Food safety

Food must be prepared and cooked in a safe, healthy and hygienic way so as to avoid food borne illnesses that at their worst can even be fatal.

- **Wash hands repeatedly before, whilst and after cooking; and while handling foods.**
- **Ensure that kitchen surfaces and utensils are thoroughly clean before, during and after use.**
- **Opt for food that has been treated to ensure safety, such as 'pasteurised' not 'raw' *ġbejniet.***
- **Avoid cross-contamination with other foods when handling raw poultry and meats.**
- **Cook food thoroughly.**
- **Eat food very soon after it is cooked. If it is to be eaten at a later time, cool quickly and place it in the refrigerator. Remember, hot items may take long to cool allowing for bacteria to flourish at the centre. To cool quickly,**

place in a shallow container, or cool the storage dish in a container with ice.

- **Reheat stored food thoroughly and eat immediately.**

h. Sustainability

Food is an important component of life. In the past years there have been increasing awareness about how the food we eat affects our health but unfortunately there has not been enough awareness on how what we eat today affects the world's resources in the future. The food we produce and consume has a significant impact on the environment.

The 'Green Food Project' (DEFRA, 2013) has come up with eight key principles that adhere to a healthy and sustainable diet:

- Eat a varied balanced diet to maintain a healthy body weight.
- Eat more plant based foods, including at least five portions of fruit and vegetables per day.
- Value your food. Ask about where it comes from and how it is produced. Don't waste it.
- Moderate your meat consumption, and enjoy more peas, beans, nuts, and other sources of protein.
- Choose fish sourced from sustainable stocks. Seasonality and capture methods are important here too.
- Include milk and dairy products in your diet or seek out plant based alternatives, including those that are fortified with additional vitamins and minerals.
- Drink tap water.
- Eat fewer foods high in fat, sugar and salt.

7.0 Food Based Dietary Guidelines – the Mediterranean Way

The equivalent of three main meals is usually eaten daily; and some people may include one or two smaller snacks throughout the day. The table below shows the number of servings for each of the six food groups that could be eaten by adults. They are aimed at healthy Maltese adults aged 19 - 65 years and have been calculated on a diet of about 2000 Calories; though calories consumed will vary depending on the food choices made by individuals. Individuals need to be aware of the fact that the total amount of food to be consumed depends on age, gender, height, weight and physical activity levels of the person.

Consume Daily		
Cereals	1 serving per meal 3-4 per day	Include bread, pasta, rice, couscous and other cereals and cereal products in your daily diet. Preferably opt for wholegrain/wholemeal varieties. ***1 serving = 1 medium slice of bread; 40g = breakfast cereals; 80-100g = cereals, pasta and rice preferably wholegrain or wholemeal***
Vegetables	3-5 servings per day	Opt for a wide variety of colours and textures, ideally fresh. These will provide a diversity of antioxidants and fibre which protect against heart disease and certain cancers amongst others. ***1 serving = 80g***
Fruit	2-3 servings per day	Opt for a wide variety of fruits of different colours and textures. Choose these as your regular dessert. Fruit provide a diversity of antioxidants and fibre which protect against heart disease and certain cancers amongst others. ***1 serving (=80g) = 1 medium sized fruit or 2 medium sized plums or 80g fresh fruit salad***
Water	1.5 -2.0 litres (6-8 glasses)	Drink plain water. You can also have non-sugary herbal infusions and broths (with low fat and salt content) for adequate hydration ***1 serving = one '250ml' glass/bowl***
Dairy products	2 servings	Choose low-fat plain milk, yoghurt and cheese as part of your daily diet. Low-fat versions are advised as full-fat versions can be a high source of saturated fat. Lower fat versions are still high in protein and calcium. ***1 serving = 250mls milk; 1 tub (150mls) yoghurt; 30-40g cheese and 45-50g irkotta/ġbejna***
Olive oil	1 tablespoon (15mls)/ person	Use as the principal source of dietary fats/oils ***1 serving = 1 tbsp/15ml***
Spices, herbs, garlic and onions		Use to introduce flavours and palatability to dishes and to help reduce your intake of added salt
Consume Weekly - Traditional Mediterranean dishes do not usually contain animal protein foods as the main ingredient.		
Fish	**2 or more servings**	Fish is a good source of protein and some are also a good source of healthy fats/oils A serving of oily fish per week is recommended. ***1 serving = 115g***
Legumes	**2 or more servings**	Legumes combined with cereals provide a healthy source of plant protein and

		fat. They are high in fibre content which has many benefits for health. ***1 serving = 70g (raw)/140g (cooked/canned)***
Potatoes	3 or less servings	Potatoes are part of many traditional recipes, especially those with meat and fish. Potatoes used are preferably fresh and cooked with minimal fat. ***1 serving = 80g potato preferably with skin***
Olives, nuts and seeds	A handful	These serve as healthy snack alternatives, being good sources of healthy fats, proteins, vitamins, minerals and fibre. ***Nuts: 80-90g per week (equivalent to 20g x 4-5 times a week); Seeds: 60-70g per week (equivalent to 15g x 4-5 times a week)***
Eggs	2-4 servings	Eggs are a source of animal protein food. ***1 serving = 1 egg***
White meat	2 servings	Opt for lean meat. ***1 serving = 100g***
Red meat	Less than 2 servings	**Eat smaller quantities and less frequently.** ***1 serving = 90g***
Consume Occasionally (if Desired)		
Foods and drinks rich in sugar and unhealthy fats	Small quantities – consume occasionally	Sugar, sweets, chocolate, sweet and savoury pastries; as well as fruit juices and soft drinks[4]
Processed meat	Small quantities – consume occasionally	Breaded and other ready-made protein foods e.g. nuggets and burgers, sausages, ham and canned meat.
Wine	Small quantities – consume occasionally	If you opt to drink, limit your intake and have it with your meal. **Overconsumption is to be avoided at all times.**

*This table has been adapted from the 'Mediterranean diet pyramid: a lifestyle for today'. Guidelines for the adult population by *Fundacion Dieta Mediterranea* Expert Group (2010 edition) (Bach-Faig & Berry et al., 2011)

Note: The Healthy Plate - Dietary Guidelines for Maltese Adults has been drafted by a national multidisciplinary group of experts with the aim of providing better advice to the Maltese public on how to consume a healthier diet. It replaces the food pyramid guide that has been used locally in the past years; and is based on the best available scientific evidence on nutrition to date, whilst reflecting cultural habits. These Guidelines may be revised to reflect dietary evidence collected from the First National Food Consumption Survey once it is completed.

[4] If these are consumed, have them with your meals.

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