

2012-2020

# A Healthy Weight for Life: A National Strategy for Malta



Superintendence  
of Public Health  
Ministry for Health,  
the Elderly and Community Care

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## Foreword

# A Healthy Weight for Life

It is clear that Malta, like many other countries in the world, is experiencing significant challenges to maintain a healthy weight across its population. This strategy seeks to address these challenges, in as comprehensive and as organised an approach as possible



The Ministry for Health, the Elderly and Community Care has committed itself to steer the development of a strategy which will effectively address the noted challenges.

We commenced by exploring the intricate factors which determine such challenges. We then sought to identify the sectors which we are obliged to work alongside with, in our quest to help our population maintain a healthy weight.

Many entities, varying from other ministries within the Government of Malta to NGOs and the private sector, have been consulted in the course of developing this Strategy. The contribution of all has been most helpful and welcome; the continued participation of all is hereafter indispensable.

The establishment and maintenance of a healthy weight draws heavily upon an individual's choices, but the environment within which an individual makes one's choices is determined by many factors, sectors, and entities.

Drawing on the available evidence, and the esteemed contribution of all, this strategy seeks to direct the participation and contribution of all identified factors, sectors, and entities towards the development of an environment which accommodates, and moreover facilitates, healthy choices by the individual which translate into healthy weight.

I would like to thank the members of the Intersectoral Committee to Counteract Obesity (ICCO), and the team from my Ministry, who have consolidated the contribution of all, towards the development of this strategy. I trust we will all continue to work together towards securing optimal health for all.

**Dr Joseph Cassar**

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## Preface

International studies have clearly shown steep upward trends in the global incidence and prevalence of overweight and obesity in both children and adults. This problem is expected to continue to grow over the coming years, thereby aggravating the severe health, economic and social consequences of this epidemic. The situation in Malta is no different to that being experienced in the rest of Europe and indeed the world over.

The Strategy aims to halt the rising overweight and obesity rates and eventually to decrease the number of people suffering from this condition, subsequently reducing morbidity and mortality from related conditions and healthcare and productivity costs and aiming towards an improved quality of life.

Following the Istanbul Charter on Counteracting Obesity (WHO, 2006), the Health Division set up an Inter-sectoral Committee to Counteract Obesity (ICCO) to create a forum to address the key determinants of obesity and work on a strategy to tackle the problem. ICCO meetings were chaired by the undersigned and the members represented a spectrum of sectors from across government and non-governmental entities including health, education, agriculture, finance, transport, environment, urban development, broadcasting media, and catering sectors. The Committee met regularly over the past three years and a number of co-ordination meetings were held with the various members on a bilateral basis.

A situation analysis was carried out to take stock of the various initiatives that are in place which have an impact on counteracting the problem. This was followed by a review of scientific literature on different preventive approaches to obesity and the identification of good practice and effective interventions. A number of areas requiring action were therefore identified and a multi-sectoral drafting group tasked with drafting the Strategy.

The Strategy recommends a significantly stepped up and co-ordinated multi-sectoral approach that must be adopted if the trend of increasing obesity and overweight within the Maltese population is to be stopped and reversed. This document discusses a number of possible economic and fiscal measures and targeted programmes directed at communities, schools, families, and workplaces. It also proposes wider environmental changes to facilitate increased physical activity and measures to improve nutrition to achieve and maintain a healthy weight throughout life. Specific services targeted at overweight and obese individuals are to be delivered by a multi-professional team with a range of options available according to individual needs of both adults as well as children.

The implementation of the Strategy and its Action Plan will be led by the Healthy Weight for Life Implementation Group within the Superintendence of Public Health. The Implementation Group will work with ICCO and other stakeholders to implement the strategy direction outlined in this document. The ultimate aim is to create the right environment that leads to the empowerment of people to maintain a healthy weight at all life stages.

I would like to thank all the members of ICCO and the drafting group for their commitment and contribution towards the drawing up of this national document which has now been endorsed by Government.



**Dr Raymond Busuttill**  
Superintendent of Public Health

## Abbreviations

BMI	Body Mass Index
CINDI	Countrywide Integrated Non-communicable Disease Intervention
CPD	Continuing Professional Development
ECOSI	European Child Growth Surveillance Initiative (WHO)
EPD	Economic Policy Division
FBS	Food Balance Sheets
FMCU	Financial Monitoring and Control Unit
GDP	Gross Domestic Product
HBS	Household Budgetary Survey
HBSC	Health Behaviour Study in School Children (WHO)
HELP	Healthy Eating Lifestyle Plan
HEPA	Health Enhancing Physical Activity
HIS	Health Interview Survey
ICCO	Intersectoral Committee to Counteract Obesity
IGT	Impaired Glucose Tolerance
IOTF	International Obesity Task Force
ISEEM	Individual, Social, Economic and Environmental Model
MEDE	Ministry for Education and Employment
MEHFA	Malta Exercise, Health and Fitness Association
MFEI	Ministry of Finance, Economy and Investment
MEPA	Malta Environmental and Planning Authority
MHEC	Ministry for Health, the Elderly and Community Care
MITC	Ministry for Infrastructure, Transport and Communication
MONICA	Multinational Monitoring of Trends and Determinants in Cardiovascular Disease
MRRA	Ministry for Resources and Rural Affairs
MVPA	Moderate-to-Vigorous Physical Activity
NCF	National Curriculum Framework
NEP	National Environment Policy
NFSI	Nutrition Friendly School Initiative
OECD	Organisation for Economic Co-operation and Development
OPM	Office of the Prime Minister
PSD	Personal and Social Development
SPH	Superintendence of Public Health
WHO	World Health Organisation

## Executive Summary

With 40 to 48% of children and 58% of adults being overweight and obese, excess weight in both children and adults in Malta has become a major concern. After reviewing the epidemiology and complex causal factors affecting this epidemic, this Strategy (2012-2020) identifies multi-sectoral areas for action which are effective and designed to lead to containment and reversal of the epidemic.

Obesity has considerable effects on mortality and morbidity, causing more than one million deaths and the loss of more than twelve million life-years each year in the European Region alone. It is responsible for a significant proportion of cases of diabetes, heart disease and high blood pressure. Obesity reduces life expectancy, significantly reduces health-related quality of life and increases the risk of onset of several chronic diseases. The health consequences of overweight and obesity are also important in children, who are more commonly exhibiting health conditions related to obesity, including low self-esteem and mental health symptoms.

Obesity causes a considerable economic burden on society through increased healthcare costs of treating associated diseases (direct costs) and costs associated with lost productivity due to absenteeism and premature death (indirect costs). The excess direct cost on the Maltese health service associated with overweight and obese individuals as compared with persons of normal weight is estimated to be nearly 20 million Euro per year (in 2008), accounting for 5.7% of total health expenditure. This estimate does not include expenses related to medication, surgery, ancillary services and loss of income. This amount increases to over 25 million Euro when private healthcare costs are included.

An inter-sectoral committee led by the then Director General Public Health Regulation (Superintendent of Public Health), was set up to assess the current situation and evidence, and develop a strategy with recommendations for action. The aim of this Strategy is to reduce the prevalence of overweight and obesity

within the Maltese population and achieve a healthy weight for life. This requires an inter-ministerial and multi-sectoral approach, so that changes are made to the living environment, which shift it from one that promotes weight gain (obesogenic) to one that promotes healthy choices and a healthy weight for all.

In order to promote healthy eating, the following priority areas for action have been identified:

To improve the availability and uptake of a healthy diet by the Maltese population through healthy public policies across Government.

To work with stakeholders on consumer education about healthy eating and moderation as underlying principles of healthy eating.

To promote exclusive breast feeding for the first six months of life and to continue breastfeeding in the first years of life.

To support pregnant women and new mothers to adopt healthy eating habits for themselves and their families through education and community initiatives.

To support schools and families so that meals and snacks, including drinks, prepared for school aged children are nutritious and appetising, without being energy-dense and/or containing excess amounts of fats, trans-fatty acids, salt and sugar.

To regulate audiovisual advertising, such as advertising of unhealthy foods especially that directed at children.

To support schools to implement all the recommendations of the Healthy Eating Lifestyle Plan (HELP) document and to strengthen the Personal and Social Development (PSD) and Home Economics curricula as related to nutrition and healthy choices.

To set up a National Task Force led by the Ministry responsible for Health to develop action plans on the

introduction of agreed mechanisms to reduce salt and sugar, limit saturated fat and eliminate transfat content in local food products.

To set up a Healthy Food Scheme using colour coding so that healthy food is easily identifiable.

In order to promote physical activity, the following priority areas for action have been identified:

To increase physical activity through healthy public policies, so that the living environment is one that promotes healthy choices.

To implement the recommendation of three hours of physical activity weekly for all schoolchildren.

To encourage children and parents to use a screen time log, reduce the number of hours of watching television, use of computer/video games to a maximum of two hours per day for children, and to encourage sit down meals as family time as opposed to TV dinners, whenever possible.

To support Local Councils to increase the opportunities available for physical activity, including the use of legislation and enforcement to improve safety on the roads, availability of open spaces and increase walkability in built-up areas.

The Ministry for Health, the Elderly and Community Care (MHEC) is committed to re-orienting public health services to increase the importance of health promotion and disease prevention. It is committed to the following initiatives:

To increase and improve weight management and physical activity classes for adults.

To set up community initiatives such as cookery clubs and community gardens, focusing especially on lower socio-economic groups and older persons.

To increase and improve parentcraft and breastfeeding classes.

To provide training and guidelines to health professionals in primary care in order to improve the delivery of holistic advice and management on all issues related to nutrition, physical activity and weight management and ensure that it contains the same key messages.

To work with stakeholders to develop a national curriculum and certification for facilitators of weight management programmes.

To set up multi-disciplinary clinics for the management of excess weight in adults and children.

Possible economic measures which may act as motivators to healthy lifestyle choices are discussed. Feasibility studies on the introduction of sin taxes as well as incentives and subsidies for increased accessibility and affordability of healthy food are proposed.

The vision for this Strategy is to have a society where healthy lifestyles related to diet and physical activity become the norm and where healthy choices are easy and accessible to all, so as to prevent disease and prolong disability free years of life.

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## Chapter 1

# Introduction



International scientific and health agencies such as the World Health Organisation and the International Obesity Task Force have documented that Maltese children and adults are amongst the heaviest both within Europe as well as globally (WHO,2010).

## 1.1 Background

Excess weight presents the European region with an unprecedented public health challenge. The prevalence of obesity is rising at a very rapid rate and it has been estimated that by the end of 2010, up to 30% of adults were obese (WHO, 2010).

The Maltese population is also faced with this increasing prevalence of obesity across all age groups. The MONICA base-line study (WHO, 2005) conducted in the mid-1980's officially documented high adult prevalence rates of overweight and obesity and related co-morbidities. By the early 1990s, two key official local documents, *Food and Health in Malta* and *Health Vision 2000*, both showed trends of rising obesity levels across all age groups. International scientific and health agencies such as the World Health Organisation and the International Obesity Task Force have documented that Maltese children and adults are amongst the heaviest both within Europe as well as globally (WHO, 2010).

As implied by the *European Charter on Counteracting Obesity* (WHO, 2006), the obesity problem can no longer be dealt with by generic campaigns or interventions that focus solely on raising awareness on healthy eating, physical activity and an emphasis on individual responsibility for change. This approach has largely proved to be ineffective. Different strategies and approaches are required to deal with the underlying reasons why a society is 'obesogenic' or characterized by environments that promote increased food intake, unhealthy diets and physical inactivity.

Over the past twenty years, Malta's efforts to curb the rising trend in obesity levels have been mostly directed by health education initiatives and broad public campaigns. These were primarily aimed at increasing awareness and knowledge on the health benefits of physical activity and a healthy diet, especially the Mediterranean diet. These efforts now have been accompanied by new efforts aimed at changing behaviour with initiatives within communities and workplaces. In addition over the recent years Government funded weight management and exercise classes have also been provided.

The nation is facing an obesity epidemic which is estimated to cost €20 million annually in state medical expenses alone. This was estimated to be due to increased levels of inpatient and day care stays, consultations with specialists and family doctors, as compared with people of normal weight (Calleja N, Gauci D, 2009). International reports from the United States of America (*Childhood Obesity*, 2010) and the United Kingdom (*Foresight Report*, 2010) have projected estimates that the costs related to obesity will double by 2050 unless immediate action is taken to reverse the current trend in obesity. The economic implications of obesity are described in Chapter 3.

Policy and environmental change initiatives that make healthy choices in nutrition and physical activity readily available and affordable to all will prove most effective in combating obesity. These key areas of the Strategy will be explored further in Chapters 4 and 5.

The provision of services to persons at risk or already suffering from complications of overweight and obesity is described in Chapter 6. Throughout the Strategy document, the search for innovation and new research on identified gaps in knowledge and practice is encouraged. Resources will be allocated to address these gaps.

## 1.2 Current policies

The *National Strategic Reference Framework 2008-2013* already places the health of the population in a crucial position: “In the light of demographic changes and an ageing population described earlier, it is essential to increase the number of healthy years of work for members of the workforce” (page 47). A healthy workforce is central to attaining the goals of national policy *Vision 2015*, diversification of our economy, promoting competitiveness and the emphasis on knowledge-based activities. The group of diseases collectively known as non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes and stroke is responsible for 82% of deaths in Malta. Obesity is both a risk factor and contributory to deaths and ill-health. Many of these diseases are preventable, primarily through lifestyle changes.

Healthy choices and lifestyles are included as part of the core component of the draft *National Curriculum Framework* (NCF) both within Personal and Social Development (PSD) lessons and in Physical Education, Home Economics, Science and Biology lessons at different stages in the education of Maltese children. Schools are already committed to implement the *Healthy Eating and Lifestyle Plan* (HELP) - guidelines regarding what should be taught within schools relating to healthy foods including what food items should be available in school tuck shops/canteens.

The draft *National Environment Policy* (NEP) addresses key concerns in promoting open spaces within our towns and villages, air quality and non-motorised forms of transport which are in synergy with the objectives of this strategy. In recent years, the *Kunsill Malti għall-iSports*, together with sports organisations, has developed standards and made available a variety of leisure and competitive sports initiatives, including sports facilities in many localities. The Public Transport reform which also aims to increase walking and reduce car dependency has recently been implemented. A further description of Government initiatives and policies is included in later chapters.

## 1.3 Aim of Strategy

This National Strategy is presented within the context of a clear national recognition of the overweight and obesity epidemic in the Maltese Islands and is accompanied by Government’s commitment to address the issue by means of the appropriate policies and resources.

The overall aim of the Healthy Weight for Life Strategy is to curb and reverse the growing proportion of overweight and obese children and adults in the population in order to reduce the health, social and economic consequences of excess body weight.

In order to measure the effectiveness of this Strategy, we aim to demonstrate the following improvements in children and adults by 2020:

- **Reduction in the self-reported proportion of the adult population who are overweight from 36% to at least 33%.**
- **Reduction in the self-reported proportion of the adult population who are obese from 22% to at least 18%.**
- **Reduction in the proportion (measured by anthropometric studies) of 7 year olds who are overweight and obese from 32% to 27%.**
- **Maintenance of the proportion of 13 year olds above the 95% weight centile (obese) below 15%.**

**The overall aim of the Healthy Weight for Life Strategy is to curb and reverse the growing proportion of overweight and obese children and adults in the population in order to reduce the health, social and economic consequences of excess body weight.**



## Chapter 2

# The Public Health Case for Action



## 2.1 Defining obesity along the Life course

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. Obesity occurs when energy intake from food and drink consumption, including alcohol, is greater than the energy requirements of the body's metabolism over a prolonged period, resulting in the accumulation of excess body fat.

Since body fat is difficult to measure directly, obesity is often categorised by body mass index (BMI). BMI adjusts weight for height and while it is not a perfect indicator of obesity, it is a valuable tool for public health.

For children and adolescents, these BMI categories are further divided by gender and age because of the changes that occur during growth and development. The use of the WHO Reference Child Growth Standards is advised for assessing the prevalence of obese or overweight children. Growth charts used to calculate children's BMI are also available from the

Centres for Disease Control and Prevention (CDC, Atlanta). Children and adolescents with a BMI between the 85<sup>th</sup> and 94<sup>th</sup> percentiles are generally considered overweight, and those with a BMI at or above the sex and age-specific 95<sup>th</sup> percentile of population on this growth chart are typically considered obese.

An alternative measure to BMI is the measurement of visceral or abdominal obesity. The absolute waist circumference is used as a measure of central obesity in adults, and can also be a marker of increased risk for heart disease, hypertension, diabetes mellitus and insulin resistance even in persons of normal body weight. Values for this indicator are ideally maintained at less than 102cm in men and less than 88cm in females, and values above these indicate higher health risks.

## 2.2 Epidemiology of Overweight and Obesity in the Maltese Islands

A number of surveys have measured the rates of overweight and obesity in children and adults. The majority of these studies present self-reported data which, in spite of its limitations is still useful especially when analysing trends.

Anthropometric data (i.e. actual measurements) from the total national cohort of six year old children conducted by Grech and Farrugia Sant'Angelo in 2007 indicated that, on the basis of International Obesity

### BMI

Less than 18.5 kg/m <sup>2</sup>	Underweight
18.5 to 24.9 kg/m <sup>2</sup>	Normal range
25 to 29.9 kg/m <sup>2</sup>	Overweight
More than or equal to 30 kg/m <sup>2</sup>	Obese

**Table 1. Percentage of overweight and obesity in all 6 year old children in Malta and Gozo in 2007**

	Girls	Boys	Girls BMI	Boys BMI
<b>WHO criteria (2007)</b>				
<b>Total (n)</b>	1669	1792		
<b>Overweight (n)</b>	311	369	<b>Overweight ranges</b>	
<b>% Overweight</b>	18.6	20.6	17.10-18.84	16.75-19.4
<b>Obese (n)</b>	215	349	<b>Obese ranges</b>	
<b>% obese</b>	12.9	19.5	>18.85	>19.5
<b>% Overweight + obese</b>	31.5	40.1		

Task Force (IOTF) criteria, over a quarter of Maltese school-entry children were overweight or obese. However, if the WHO (2007) standards are applied, this percentage rises significantly as is seen in Table 1. The highest BMI for both genders was reported in the Harbour area.

Using the same criteria (WHO, 2007), the same total national cohort of children was measured again in 2008 and 2010. The total of overweight and obese children has increased to 47.9% in boys and 39.5% in girls, both aged 9 to 10 years (Farrugia Sant'Angelo and Grech, 2011).

**Table 2: Follow up of the 2007 (6 year old) cohort of children in 2008 and 2010 (Farrugia Sant'Angelo and Grech, 2011)**

	Overweight and Obesity		Obesity	
	2008	2010	2008	2010
Boys	34.5%	47.9%	17.2%	20.3%
Girls	29.8%	39.5%	15.5%	17.4%

These figures clearly show a marked rise in overweight and obesity rates in the same cohort of children over the span of 2 years, with this being more evident in boys.

The *Health Behaviour in School Children* (HBSC) study is a WHO initiative which assesses the health and lifestyle of children aged 11, 13 and 15 years. The 2006 HBSC study, which was conducted in local schools, and was based on self-reporting of height and weight, found a high proportion of Maltese children to be overweight. Approximately 15% of 13-year olds were above the 95<sup>th</sup> weight centile. The rates

were generally higher than the previous findings in the same study carried out in 2002. The HBSC was repeated in 2010, but the results are not yet available.

In comparison to other countries, Malta has the second highest proportion of obese or overweight children amongst 11 and 13 year olds, and the overall highest proportion of obese and overweight 15 year olds when compared to the 41 countries participating in the study. In all three age groups between 28% and 31% of children have a self-reported BMI that is greater than 25.

IOTF data also shows that over 35% of children in the 7-11 year age group in Malta are overweight or obese. A study on 6 -7 year olds carried out in 2008, found 26.1% of boys and 29.58% of girls to be overweight and obese according to the 2007 WHO Child Growth Standards (*European Child Growth Surveillance Initiative* (ECOSI) Malta, 2008).

Self-reported data for the adult population is available from the *European Health Interview Survey* (HIS 2008). This was a weighted-stratified sample, stratified on 5-year age group, gender and locality, from all the Maltese resident population aged 16 and over. The sample was of 5500 subjects, out of which the non-eligible (due to death, or migration) were removed and circa 73% of those eligible replied. From this survey approximately 22% of the population has been found to be obese while a further 36% was overweight. When compared to EU member states, Malta has the highest rate of obesity amongst males and the third highest rate amongst females. 69% of males and 49.1% of females were overweight and obese (HIS, 2008).

**Table 3. Percentage of children aged 11, 13 and 15 years with self-reported BMI >85<sup>th</sup> centile in 2002 and 2006 (HBSC, 2002, 2006)**

	11 year olds		13 year olds		15 year olds	
	Boys	Girls	Boys	Girls	Boys	Girls
2002			33.8%	23.5%	27.9%	16.7%
2006	25.4%	30%	31%	30.9%	32.1%	27.8%

The HIS also showed that obesity and overweight rates are higher amongst males than females. In males the highest percentage of obese and overweight individuals is in the 55 to 64 age group. In females the highest proportion of overweight is in the 45 to 54 age group, while the highest rate of obesity occurs in the 65 to 74 age group. It has also been noted that BMI decreases as educational level increases. This effect is still visible when adjusting for the possible confounding effect of age and gender. However, even though the average BMI amongst those with tertiary education is the lowest, it is still high at 25.9 kg/m<sup>2</sup> which is in the overweight range. When compared to the HIS carried out in 2002, the discrepancy between genders has increased from 2002, as did the prevalence of obesity in the groups with the lowest educational level.

At the end of 2010, a pilot Health Examination Survey was carried out. This will provide anthropometric data as well as the prevalence of other risk factors such as high blood pressure, high cholesterol and high blood glucose.

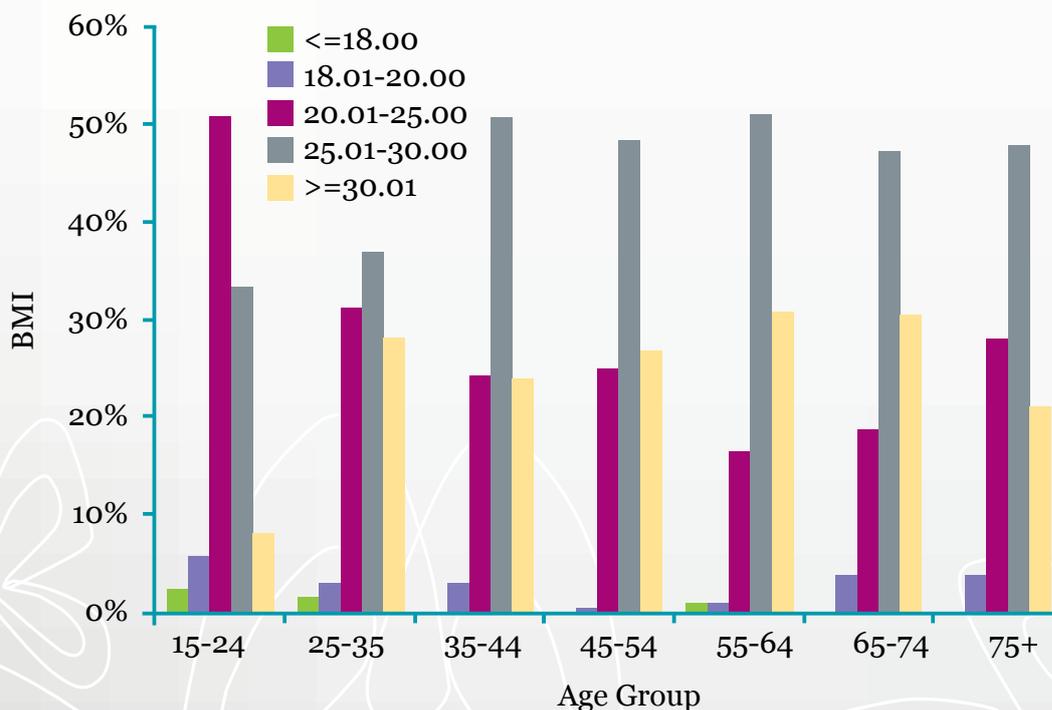
## 2.3 The Determinants of Obesity

### 2.3.1 Food consumption and Environmental factors

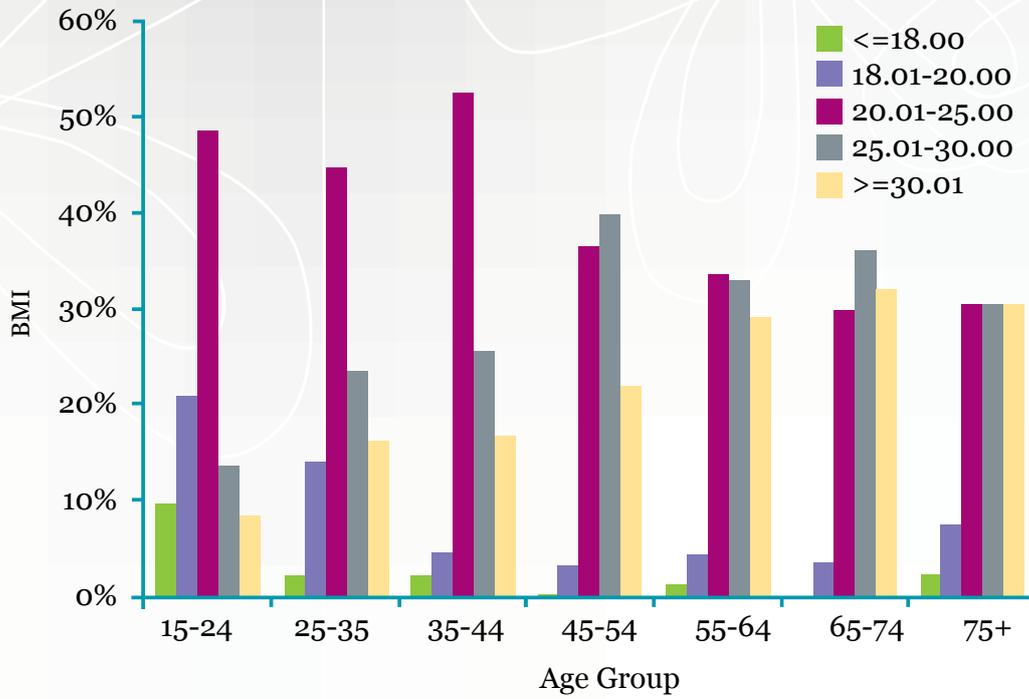
The modern food environment provides a wide range of opportunities for the consumption of food and drink products, commonly leading to what has been described as ‘passive overconsumption’. Studies show that the consumption of energy-dense diets and energy-rich drinks such as sugary drinks are the main factors conducive to this inadvertent overeating. This coupled with insufficient physical activity leads to obesity (WHO, 2007).

Several studies have shown the benefits of a healthy diet and a healthy weight. Falagas *et al.* (2009) showed that obese or morbidly obese patients with infections had worse outcomes compared with other patients or with normal-weight patients. Neovius *et al.* (2008) concluded that there is a clear trend towards greater sick leave rates among obese compared with normal weight workers. They concluded that substantial weight loss in obese

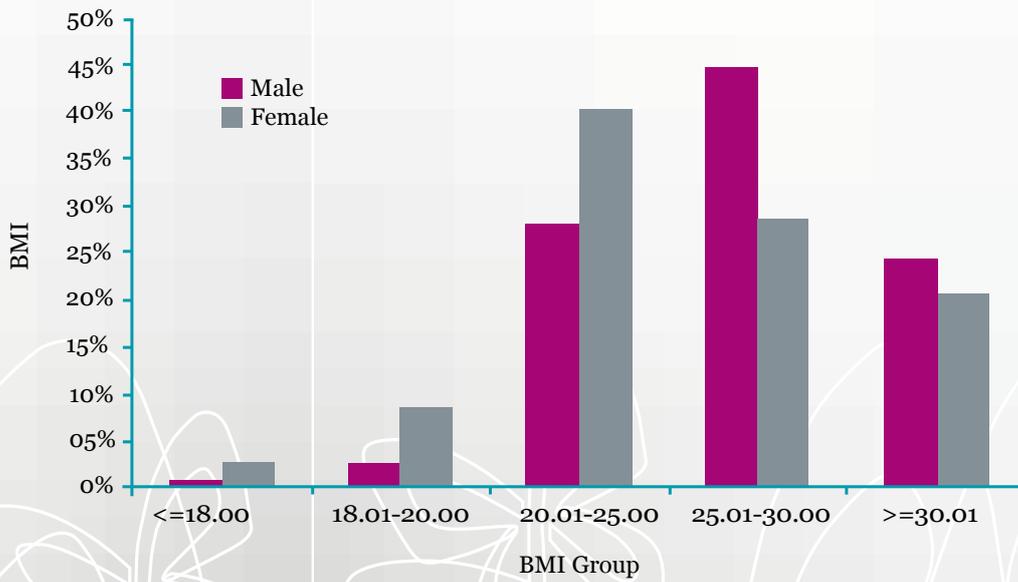
**Figure 1: Percentage of self-reported BMI in males according to age group (HIS 2008)**



**Figure 2: Percentage of self-reported BMI in females according to age group (HIS 2008)**



**Figure 3: Percentage of self-reported BMI in both males and females (HIS 2008)**



subjects resulted in reduced sick leave and that increased obesity in children and adults was likely to negatively affect future productivity because of the increased risk of sick leave in obese individuals. Janssen *et al.* (2006), in their study on the relationship between an elevated body mass index and mortality risk in the elderly, concluded that even in the elderly population, a BMI in the moderately obese range was associated with a modest increase in mortality risk. Lifestyle interventions which had the aim of weight improvement resulted in a reduction in hypertension, a reduction in risk of type 2 diabetes and the metabolic syndrome (Brown *et al.*, 2009).

Increasing voluntary and involuntary physical activity across all age groups and settings is another challenge that this strategy document identifies. Improvement in access to clean, safe open spaces, sports facilities, safe and pleasant walking and cycling paths, as well as transport policies to encourage public transport use will all require collaboration from key sectors in urban planning and transport agencies.

Measures to positively influence change in food supply and demand as well as leisure and/or voluntary physical activity are proposed in Chapters 4 and 5 respectively.

### 2.3.2 Socioeconomic inequalities and obesity levels

The WHO Commission on Social Determinants of Health (2007) concluded that 'social injustice is killing on a grand scale'. The *Marmot Review* showed how in England, people living in the poorest neighbourhoods, will on average die seven years earlier than people living in the richest neighbourhoods. In addition, the average difference in disability-free life expectancy is 17 years (Marmot, 2010). The *Marmot Review* identifies childhood as a key time to effecting health and wellbeing during the life course, including effects on obesity, heart and mental health. The Review also showed a clear association between deprivation and the prevalence of obesity (2010).

Studies of the relationship between socioeconomic status (defined by occupation, education and income) and obesity have shown a consistent inverse relationship among women from upper and upper-middle income countries (WHO, 2007). Findings among men and children are more inconsistent. In addition, countries with the highest levels of income inequality had the highest levels of obesity among both males and females. The trend is changing so that whereas obesity was previously a sign of affluence in middle and low income countries, the evidence is that the burden of obesity tends to shift towards groups of lower socio-economic status as countries' GDP increases (WHO, 2007). Over 20% of the obesity found in men in Europe and 40% in women is attributable to inequalities in socio-economic status (Robertson *et al.*, 2007).

The latest studies among affluent EU countries reported an inverse relationship between education and either BMI or obesity among both men and women (WHO, 2007). Obesity in children and adolescents also seems to follow a socio-economic gradient in affluent countries, with higher rates in more deprived areas. The relationship between educational level and obesity was also clearly demonstrated in Malta in the *Lifestyle Report* based on the data of the HIS 2008.

### 2.3.3 The Early Years

The influence of the mother's body weight prior to conception and during pregnancy has a key bearing on the weight of the neonate at birth and thereafter. The *National Obstetrics Information System* reports that between 2007 and 2009, 37% of mothers were obese in early pregnancy and 49% were overweight.

Pregnant women need to be aware of the importance and benefits of maintaining a healthy weight before, during and after pregnancy. The benefits of breastfeeding as a protector in early childhood to gaining excess weight during the early years has also been shown in a number of studies (Gillman MW *et al.*, 2001). The WHO recommends that mothers

should be encouraged to increase breastfeeding for up to a minimum of 6 months, as this is beneficial to both mother and baby (WHO, 2010).

A detailed approach to promoting breastfeeding amongst expectant mothers and to support mothers in the post-natal period is found in Chapter 4.

Scientific evidence shows that the accumulation of fat in childhood predicts obesity and insulin resistance in young adulthood. A study carried out by Steinberger *et al.* (2003) concluded that adiposity (increased amount of fat) in children was a strong predictor of young adult adiposity and also that cardiovascular risk in young adulthood is highly related to the degree of adiposity as early as age 13. This highlights the importance of focusing on reducing overweight and obesity in children.

### 2.3.4 Birth Weight

Mothers who have gestational diabetes or impaired glucose tolerance (IGT) are more likely to give birth to babies with a high birth weight. The *Food and Health Report* recorded a study by Muscat Baron *et al.* which indicated that in 1990 Malta had one of the highest rates of newborn babies weighing over 4 kg, standing at 11.8% (Bellizzi, M *et al.*, 1993). On the other hand, recent data taken from the *European Perinatal Health Report 2005-2009* states that only 0.5% of term singleton infants were born weighing 4.5 kg or more during a five year period. This rate compares well with other EU countries (Zeitlin, J *et al.*, 2009).

## 2.4 Key Challenges Posed by Obesity

Obesity has considerable effects on morbidity and mortality, as well as reducing life expectancy. Overweight and obesity are responsible for about 80% of cases of type II diabetes, 35% of ischaemic heart disease and 55% of hypertensive disease among adults in the European Region. Overweight and obesity can cause more than 1 million deaths and 12 million life-years of ill health each year (WHO, 2007).

## Health Effects of Obesity

Increased risk of:

- Type II diabetes
- Ischaemic heart disease
- Hypertensive disease
- Cataracts
- Cancer
- Fatty liver disease
- Gallstones
- Hirsutism
- Asthma
- Musculoskeletal disorders
- Benign prostatic hypertrophy
- Mental disorders
- Impaired reproductive function
- Sleep associated breathing disorders

Systematic review shows that childhood obesity is strongly associated with risk factors for cardiovascular disease and diabetes, orthopaedic problems and mental disorders. Moreover, many obesity-related health conditions once thought to be applicable only to adults are now being seen among children. In addition to the physical health consequences, severely obese children report a lower health-related quality of life including low self-esteem, feelings of sadness, loneliness and nervousness (Strauss R, 2000). This may lead to a vicious circle of unhealthy 'comfort eating' and staying indoors (thus decreasing the amount of physical activity done) as well as poor social relations and educational disadvantage.

Obesity imposes an economic burden on society through increased medical costs incurred to treat the diseases associated with it (direct costs), lost productivity due to absenteeism and premature death (indirect costs). In the European Region, the direct health care costs of obesity account for 2-4% of national health expenditure. The indirect costs could amount to twice those for direct costs (WHO, 2007). It has been estimated that the Maltese national health system is currently spending at least €20 million annually as a result of ill-health resulting

from overweight and obesity (Calleja N, Gauci D, 2009). This accounts for around 5.7% of total health expenditure (more details in Chapter 3).

## 2.5 Addressing Obesity through Healthy Public Policy

Obesity cannot be viewed simply as a health issue, nor will it be solved by reliance on individual behaviour change instigated by health care professionals as a sole intervention (*European Charter on Counteracting Obesity, 2007*). The evidence shows that health education has been generally effective in changing knowledge, attitudes and motivation on a wide range of health issues but is highly unlikely to achieve sustained behavioural change on its own.

WHO (2007) recommends that measures to combat obesity need to extend into a range of ministries and entities such as agriculture, transport, commerce and industry, education, the mass media and communication. A successful approach requires

cross-portfolio and cross-sector collaboration and investment to make marked and sustainable changes to the living environment in order to shift it from one that promotes weight gain (obesogenic) to one that supports healthy choices and healthy weight for all. Without input from the relevant sectors particularly in the analysis and commitment stages, a policy cannot be transformed into action. It is on the basis of this recommendation that the Intersectoral Committee on Counteracting Obesity with representatives of the Ministries responsible for Health, Education, Agriculture, Finance, Transport, Environment, Urban Development, as well as representatives of the media and the catering industry was set up to co-ordinate work on the formulation of this strategy.

### Areas for action

1. To strengthen intersectoral collaboration (as initiated through ICCO), through the appointment of focal points in key sectors so as to facilitate the implementation and monitoring of this strategy.

## Chapter 3

# Economic Evaluation of Overweight and Obesity



### 3.1. Introduction

This chapter discusses the financial implications of the obesity epidemic on the Maltese economy. It also evaluates the strengths and weaknesses of some economic instruments that may motivate healthier lifestyle choices.

### 3.2. Costing the obesity epidemic

Following an exercise undertaken by the Economic Policy Division within the Ministry of Finance, the Economy and Investment and the Health Information and Research Directorate within the Ministry of Health, the Elderly and Community Care, the excess cost on the national health care system attributed to the proportion of overweight and obese individuals when compared to the proportion of persons of normal weight has been calculated. Using the targets set in the Non-communicable Diseases Strategy, the relevant projected costs for the year 2020 have been calculated.

### Results

In total, in 2008 the state health care cost attributed to the health consequences of overweight and obesity in the population aged 15 and over has been estimated at €19,540,000, for medical expenses. This calculation includes the cost of in-patient stays, day-patient stays, and GP and specialist consultations but excludes the expenses related to medication, surgery, ancillary services and loss of income (Table 4). This amount increases to a total national health care expense equal to €25,390,000 when including the cost within the private sector (Table 5). In other words, if overweight and obese individuals were of normal weight, it is estimated that the state expenditure on healthcare in 2008 would have been reduced by at least around €20,000,000.

When looking at projected costs for 2020, assuming there is no change in the proportion of overweight and obese individuals in the population and no changes in the average health care usage, the state

**Table 4: Annual state health care costs attributed to overweight and obesity for 2008 and projected costs for 2020**

		Attributable Cost 2008 (€)	Projected Attributable Cost 2020 Scenario 1~ (€)	Projected Attributable Cost 2020 Scenario 2* (€)	Projected Attributable Cost 2020 Scenario 3# (€)
<b>Inpatient Stay</b>	<b>Overweight</b>	3,420,000	4,720,000	5,270,000	4,720,000
	<b>Obese</b>	6,830,000	9,410,000	7,600,000	7,600,000
<b>Day Patient Stay</b>	<b>Overweight</b>	170,000	240,000	260,000	240,000
	<b>Obese</b>	1,680,000	2,320,000	1,870,000	1,870,000
<b>GP</b>	<b>Overweight</b>	2,640,000	3,640,000	4,070,000	3,640,000
	<b>Obese</b>	1,160,000	1,600,000	1,290,000	1,290,000
<b>Specialist</b>	<b>Overweight</b>	1,150,000	1,580,000	1,770,000	1,580,000
	<b>Obese</b>	2,470,000	3,410,000	2,480,000	2,750,000
<b>Total</b>		<b>19,540,000</b>	<b>26,910,000</b>	<b>24,620,000</b>	<b>23,690,000</b>

~Scenario 1: No change in proportion of obese population

\*Scenario 2: 4.3% of the obese population shift to overweight

# Scenario 3: 4.3% of the obese population shift to normal weight

Note: Figures may not add up due to rounding

health care cost attributed to overweight and obesity is expected to increase from €19,540,000 in 2008 to €26,910,000 (national attributed health care cost increase to €34,980,000) by 2020. If the strategy target set for 2020 is met and the proportion of the obese population aged 15 years and over is reduced, the attributed state health care cost would be €24,620,000 if there is a shift of 4.3% to the overweight category and €23,690,000 if there is a shift of 4.3% to the normal group. This shows that even if the reduction of the obese population leads to an increase in the overweight population, there will still be a reduction of over €2,000,000 in the annual cost of state healthcare attributable to overweight and obesity. If the ideal scenario is met whereby the 4.3% reduction in obesity leads to a 4.3% increase in the normal weight category by 2020, the national health care cost attributed to overweight and obesity would be around €3,000,000 less annually than if the situation remained as it is now.

### 3.3. Economic instruments to motivate healthy lifestyle choices

The use of economic instruments and regulations may be elements in a strategy (see Figure 4) to reverse the global obesity epidemic in the short term without harming or disadvantaging communities. Since interventions in each segment tend to be synergistic, the use of an economic and environmental model (ISEEM) framework involving combinations of interventions, targeted to the specific circumstances of individual communities and localities could be advantageous for obesity prevention in the years ahead (Amarasinghe, A. & D'Souza G.).

**Table 5: Annual national health care costs attributed to overweight and obesity for 2008 and projected costs for 2020**

		Attributable Cost 2008 (€)	Projected Attributable Cost 2020 Scenario 1~ (€)	Projected Attributable Cost 2020 Scenario 2* (€)	Projected Attributable Cost 2020 Scenario 3# (€)
<b>Inpatient Stay</b>	<b>Overweight</b>	<b>4,420,000</b>	<b>6,090,000</b>	<b>6,810,000</b>	<b>6,090,000</b>
	<b>Obese</b>	8,830,000	12,160,000	9,820,000	9,820,000
<b>Day Patient Stay</b>	<b>Overweight</b>	220,000	300,000	340,000	300,000
	<b>Obese</b>	2,170,000	2,990,000	2,420,000	2,420,000
<b>GP</b>	<b>Overweight</b>	2,840,000	3,910,000	4,380,000	3,910,000
	<b>Obese</b>	2,010,000	2,770,000	2,230,000	2,230,000
<b>Specialist</b>	<b>Overweight</b>	1,150,000	1,580,000	1,770,000	1,580,000
	<b>Obese</b>	3,740,000	5,160,000	4,160,000	4,160,000
<b>Total</b>		<b>25,390,000</b>	<b>34,980,000</b>	<b>31,930,000</b>	<b>30,520,000</b>

~Scenario 1: No change in proportion of obese population

\*Scenario 2: 4.3% of the obese population shift to overweight

# Scenario 3: 4.3% of the obese population shift to normal weight

Note: Figures may not add up due to rounding

**Figure 4: A Portfolio of Choices for Obesity Prevention**

<b>Economic Regulations</b>	<b>Environmental Urban planning intervention</b>	<b>Social Community empowerment</b>	<b>Individual Education</b>
Nutritional labelling, food advertising, food, environment and land use	Promote non motorised form of transport	Reduce poverty/ inequality/ social segregation	Compulsory physical activity education
Economic Instruments: Fat taxes and thin subsidies	Side walks and cycle paths	Community awareness through social clubs	Rewards for school children for healthy lifestyles
Subsidies for exercise equipments	Easy access to parks, destination	Exercise classes and training for parents, teachers	Individual tax credits for healthy weight
Tax credit for weight management/real estate developers/ primaryproducers for organic food production	Mixed land use-optimum combination of retail and service establishments and physical activity facilities	Media campaigns News papers/TV/ Radio/news letters	Subsidies for GP/doctor advice/healthy foods
		Work place programmes	Tax Incentives for exercise equipment
		School based healthy lunch programmes	

Source: Obesity Prevention: A review of the interactions and interventions, and some policy implications - Anura Amarasinghe and Gerard D'Souza

### 3.3.1 Food pricing

According to the *White House Task Force on Childhood Obesity* (2010), prices have a considerable effect on consumer choices. Consumer behaviour has changed as food prices have decreased and low cost, energy-dense foods have become more convenient. Studies show that if the price of a particular food rises or falls, consumption will decline or increase, including increases in purchases of healthier foods when prices are lowered, and decreases in purchases of less healthy foods as prices escalate.

A study of pricing effects on food choices reveals that price reduction strategies encourage the choice of targeted foods by lowering their cost relative to alternate food choices. Two community-based intervention studies showed that price reductions led to a four-fold increase in the sales of fresh fruit and a two-fold increase in the sales of baby carrot. It was also concluded that price reductions are an effective means to increase the purchase of healthier foods in community-based settings such as work sites and schools (Amarasinghe, A. & D'Souza, G.).

Whereas no systematic reviews have tackled the relationship between policy-related economic interventions and consumption of foods, two large longitudinal studies looked at the relationship between changes or differences in food prices and food consumption or weight gain. These are not experimental interventions, but observational studies tracking the association between prices and other market factors, and food consumption or BMI (which is likely to be related to consumption) over time (WHO, 2007).

### Prices and food consumption

Guo *et al.* examined longitudinal data collected in 1989–1993 from China’s health and nutrition survey on food prices and the consumption habits of 6,667 people in urban areas and rural villages. The study found large and significant responses in consumption to price changes. Moreover, increases in the price of certain foods had significant effects on consumption of their substitute foods and their complementary foods.

Although this study revealed associations between prices and food consumption, this was not a study of the impact of a pricing or tax policy intervention. Hence, whilst adding to the evidence on how food consumption patterns respond to price changes, the conditions under which the study was conducted limit the application of its findings for present-day Europe (WHO, 2007).

### Prices and weight gain

The Rand Corporation in the United States carried out a prospective four-year observational study which examined the association between the BMI of children in kindergarten and both differences in food prices and the density of food outlets in communities. The study showed that lower fruit and vegetable prices predicted a significantly lower increase in BMI for children between kindergarten and third grade. There were no significant associations between the prices of dairy foods or fast food, or density of food outlets and change in BMI. Due to the fact that data was not collected on food consumption, the study

could not verify a causal pathway from food prices to food consumption to changes in BMI (WHO, 2007).

### Food access

A number of studies suggest that better retail access to healthier foods corresponds with healthier eating (White House Task Force, 2010). Although study results are less consistent, studies from the United States show that residents with limited access to fast food restaurants have healthier diets and lower levels of obesity (Larson *et al.*, 2009).

### Areas for Action

To commission research to explore possible variations, by locality, in the availability of shops selling fast foods and vendors selling fresh fruit and vegetables.

### 3.3.2 Tax and Subsidy Policies

In order to decrease the consumption of unhealthy foods, literature has suggested that foods high in calories, fat or sugar be taxed, and that healthy foods such as fruits and vegetables be subsidized (Amarasinghe, A. & D’Souza, G.). However, there is contrasting support for such initiatives. The *European Charter on Counteracting Obesity* was adopted as a matter of policy at the WHO European Ministerial Conference held on 15-17 November 2006. Malta is a signatory to this Charter which makes a special emphasis on subsidies, reformulation and marketing restrictions.

### Tax policy

Taxing all food appears undesirable since obesity results from *over*-consumption, rather than from consumption itself (Lakdawalla, D. Philipson, T & Bhattacharya, J., 2005).

Sin taxes on high fat/calorie foods would help to raise the relative prices of such products when compared to alternatives. Food marketers may bear the financial burden of accounting for and collecting a sin tax and would likely increase prices in order to make up for these costs (Seiders, K. & Petty, R.D., 2004). On the other hand, imposing a tax on unhealthy foods

may offer an incentive to manufacturers to modify their production processes to reduce the fat, salt or sugar content in order to sustain their market share (Madore, O., 2007).

The *White House Task Force on Childhood Obesity Report* (2010) points out that research conducted recently shows that current state-level tax rates on soft drinks purchases have had a relatively small impact on adolescent and adult weights. However, a higher tax rate would likely have a larger effect on consumption, as has happened with tobacco taxes. According to Fraz *et al.* (2007), a frequent objection to food and beverage taxation on equity grounds is its regressive nature, because low-income individuals spend a higher proportion of their income on food. A study revealed the adverse distributional effects of a “fat tax” on low-income households (Leicester, Windmeijer 2004). If the goal is to change the prices of healthy compared with unhealthy foods, subsidies may be required, particularly if they could be targeted to low income households. The revenue generated from these taxes could be used for subsidies to counteract the potential regressive financial burden.

Additional challenges to the implementation of food taxes are likely to come from the general public, industry, and special-interest groups. Various polls show only moderate acceptance by the population for small taxes on soft drinks and snack foods when the revenues from these taxes would be used to fund health education and obesity prevention programmes, whereas there is a large probability of resistance to these taxes by the food and beverage industries, retail store associations, and restaurants, amongst others (Caraher, Cowburn 2005; Finkelstein *et al.* 2004; Jacobson, Brownell 2000; Kim, Kawachi 2006).

Another option is to tax foods’ nutrient content, such as those containing more fat, salt or sugar. In this case, research is required in order to establish definitions and characteristics of foods suitable for taxation or subsidy through nutrient profiling (WHO, 2007). Even though food taxes could be based on nutrient content, it would be easier legislatively to tax specific food categories, particularly those with

low nutritional value (Caraher and Cowburn 2005; Jacobson and Brownell, 2000). Various “categories” of food items with little or low nutritional content, such as soft drinks, sweets, snack foods, and fast foods, have been associated with a greater prevalence of obesity. Beydoun, Powell, and Wang (2008) found that higher fast-food prices were associated with a higher intake of fibre, lower saturated fat, and improved overall diet quality.

Even though small to moderate taxes on unhealthy foods show minimal to no impact on consumption, they are more politically viable and they could raise significant revenue (Powell, LM. & Chaloupka, FJ., 2009). This revenue could be assigned to health promotion programmes or earmarked to provide subsidies for healthy foods, or for sport and fitness activities (Madore, O., 2007).

### Subsidy policy

Direct rewards incentivise people to embark on healthy activities or discourage them from undertaking unhealthy ones, by offering immediate rewards of some kind to change their behaviour. These rewards could take various forms such as direct cash payments, vouchers, price subsidies or some other non-financial incentive (Le Grand, J. , 2008).

Introducing incentives or subsidies to promote greater consumption of healthier food choices offers an alternative to taxes on foods of limited nutritional value. Experiments have shown that targeted price changes have raised purchases of healthier snacks from vending machines. Another experiment used a colour-coded label of red (least healthy), yellow, or green (most healthy) based on fat and calorie content and added a small “tax” (around 8% of the product’s value) on each red item. After one year, this led to a 5% decline in sales of least healthy items, a 16% rise in the sale of most healthy items. Overall sales increased as well.

A study on the effect of price subsidies on healthy food consumption amongst Supplemental Nutrition Assistance Program (SNAP) participants indicates that a 10% subsidy for vegetables and fruits would

increase vegetable consumption from 1.26 cups (151g) to 1.33 cups (160g) per day, and fruit consumption from 0.89 cup (106g) to 0.97 cup (116g) (*White House Task Force Report, 2010*).

Contrary to fat taxes, subsidy programmes are likely to be progressive as the largest benefits are gained by low income earners, but need further study. However, these subsidy programmes have to be financed by taxpayers, so it is essential to further examine the overall societal welfare impacts, and whether or not such policies would be cost-effective in achieving health improvement in particular (Amarasinghe, A., D'Souza, G.).

Subsidising healthy foods seems to be a more promising strategy than taxing unhealthy foods. Subsidies provide greater benefits to low-income consumers, as they avoid the possible regressive effects of taxation (Madore, O, 2007). On the other hand, controversy still exists on whether sin taxes or food subsidies are the most effective in changing consumption patterns or whether a combination of both is needed.

#### Areas for Action

1. To analyse the impacts of subsidies on certain healthy foods and taxes on specific unhealthy food and drinks, particularly their effects on people's behaviour and income redistribution in order to determine their overall feasibility in Malta. This analysis will seek to ascertain whether such subsidies and taxes should be implemented and if this should be the case, which products should be affected and by how much.
2. To carry out feasibility studies on incentives to increase the availability of healthy food outlets (eg. smoothie bars, fresh fruit and vegetable salad bars), and restrictions related to outlets selling fast foods.

### 3.3.3 Employer Tax Incentives

Tax incentives could be a means to motivate companies to provide their employees with facilities and opportunities for diet and weight management

programmes, lower cost health care and life insurance for employees who qualify. Such incentives could be provided to companies offering their employees on-premise or subsidised fitness and weight management programmes. Another option would be to call for companies over a certain size to provide their employees with exercise facilities, and an *exercise hour* as part of their daily hours in which to use them (Le Grand, J., 2008).

#### Areas for Action

1. To examine further employer tax incentives to motivate employees to adopt healthier choices.

### 3.3.4 Incentives to promote physical activity

Such incentives might include tax credits for gym membership, fitness classes, removing sales taxes on or provide subsidies for sport and recreation equipment and activities.

Since 2005, the Nova Scotia government has allowed a "Healthy Living Tax Credit" in order to help with the cost of registering children and youth in eligible sport or recreation activities providing health benefits. This tax credit is for a maximum annual spending of Canadian \$500 (€360) per child (Madore, O, 2007). Government has shown its commitment to increasing physical activity in Malta through implementing a number of measures. These include the rebate on the purchase of bicycles, the addition to and improvement of existing public sports amenities and the reduction of taxable income for parents whose children attend sporting activities approved by the Malta Sports Council (Kunsill Malti għall-iSport. Government is committed to extending its support; this however has to be balanced out against financial constraints.

### 3.3.5 Other observations

According to the OECD (2009), the most significant results at the population level, are attained by intensive primary care counselling (*i.e.* physician-dietician counselling), as indicated in Figure 5 below. This intervention involves long and comprehensive sessions with a health specialist who adapts the intervention to the individual. Moreover, although

this intervention covers only a small portion of the total population, it focuses on people considered to be at risk and, amongst these, people having a BMI higher than 25. Thus, the effects of the interventions are concentrated on those who may benefit the most. This last consideration also holds for the more basic version of the primary care counselling intervention.

Restrictions on advertising produce a notable reduction of obesity in young people while their effects weaken as people grow older.

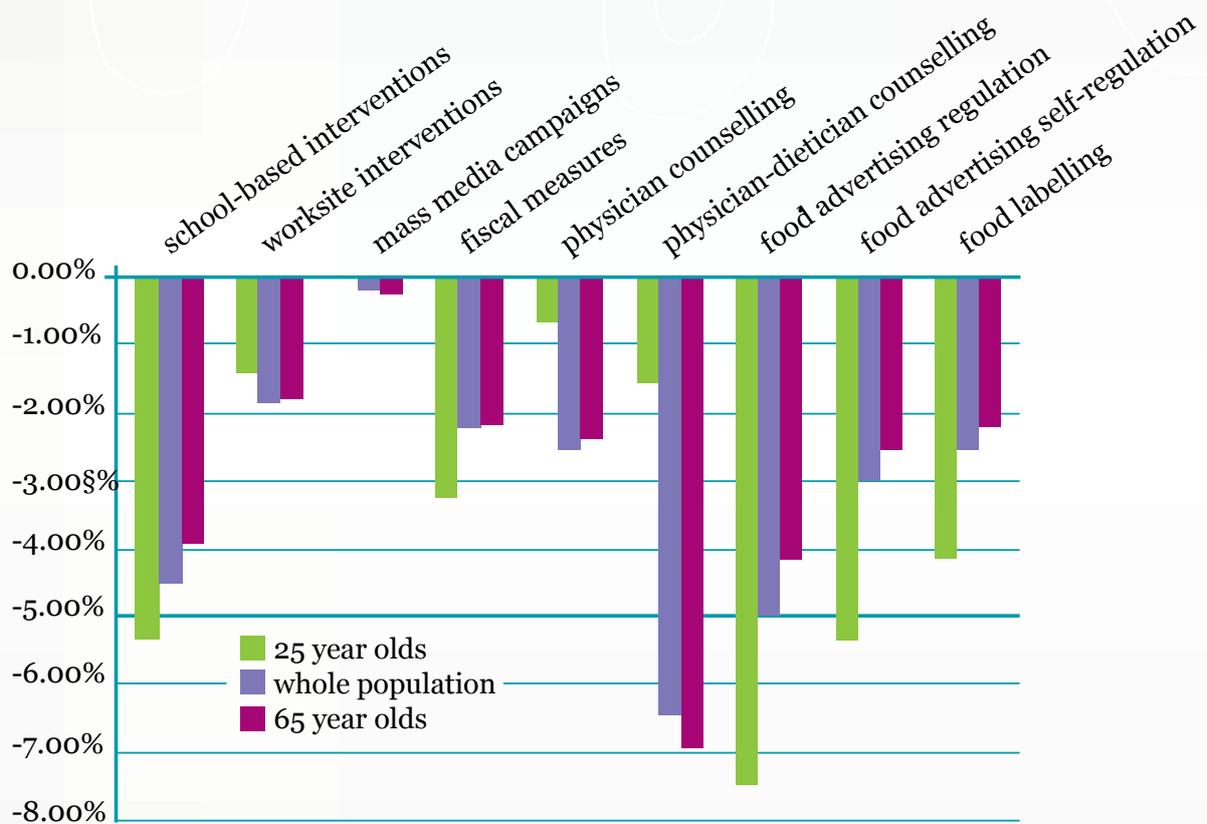


Figure 5. Decrease in obesity rates for 25 and 65 year olds and whole population

## Chapter 4

# Promoting Healthy Eating



## 4.1 Introduction

The *Strategy for the Prevention and Control of Non-communicable Diseases in Malta (2010)* outlined targets for 2020 on dietary changes that the Maltese population needs to adopt in order to achieve a healthy weight for life. These targets can be achieved by promoting the consumption of varied foods as part of the Mediterranean Diet or the Food Pyramid Guide (based on a higher intake of legumes, unrefined cereals, fruits and vegetables, moderate amounts of fish and olive oil, and less dairy products, meat and meat products). It also includes the consumption of appropriate food portion sizes so that total energy intake is balanced out through regular physical activity spread throughout the day.

WHO (2010) recommends that healthy dietary advice for populations and individuals should include the following:

- to achieve energy balance and a healthy weight.
- to limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of trans-fatty acids/trans fats.
- to increase consumption of fruits and vegetables, legumes, whole grains and nuts.
- to limit the intake of free sugars.
- to limit salt (sodium) consumption from all sources and ensure that salt is iodized.

Information on food consumption in Malta is provided by the *Household Budgetary Survey (HBS)* (Mizzi, L., 1995) and to a very limited extent by the *Health Interview Surveys (HIS)* of 2002 and 2008. The latter primarily indicated that the general public is aware of the importance of a healthy diet but this is not necessarily translated into daily food choices that reflect healthy eating habits. The results of the *Food Consumption Survey* (Malta Standards Authority, 2010) will guide the effective implementation of interventions focused on improving food choices amongst the general population and those at risk of overweight and obesity. Data on changes in behaviour in food consumption over the past years is however, not available.

The best way of preventing excess weight is by choosing to eat healthily in moderate amounts and to be physically active on a regular basis, making it easier to keep a healthy weight for life.

## 4.2 National Food Policy

The *Malta Food and Nutrition Policy (1990)* gave a mandate to the Health Promotion Department to promote healthy eating at national level over the next two decades, through various national awareness-raising campaigns. No national studies were carried out to document changes in behaviour or consumption over this time period.

Since 1990, Malta has inevitably undergone major changes in the type and quality of food products available on the market. Advertising and other marketing strategies by food companies are factors which have probably led to the increased consumption of energy-dense foods and drinks. Over time this has led to negatively influencing the 'weight-for-height' status of the Maltese people. Ongoing efforts by the health sector, through national health awareness campaigns and free national weight reduction programme for overweight and obese individuals have not been enough to halt the trend. Aggressive marketing strategies of energy-dense foods and drinks as well as widespread food outlets such as *pastizzeriji*, confectioneries, bars and kiosks have continued to increase consumption of energy dense foods and drinks. *The Malta Food and Nutrition Policy* is being revised to take account of the national epidemic of obesity, the current food consumption patterns as well as food security. The new food and nutrition policy will concentrate on improving the availability, accessibility, and affordability of fruit and vegetables through the appropriate agricultural policies; providing technical advice and marketing incentives for local horticulture including urban horticulture.

In revising the *Malta Food and Nutrition Policy*, a number of objectives are being set using the *WHO Second European Action Plan for Food and Nutrition*

*Policy* (2007 – 2012) as the appropriate benchmark. The accompanying action plan will be followed by regular evaluation and monitoring.

#### Areas for Action

1. To complete the revision of the *Malta Food and Nutrition Policy* and to formulate an Action Plan.

### 4.3 Local Statistics on Dietary Habits

The *Health Interview Survey* (HIS) of 2002 showed that the most popular methods of cooking among the survey population were steaming, baking/roasting and grilling. Fish consumption was low when compared to meat consumption. However, fish consumption was found to increase and meat consumption decrease with age. 72% of the survey population consumed chicken or rabbit once or twice a week. However, 15% reported eating highly processed meat products such as burgers and sausages on a daily basis.

The consumption of fried potatoes is markedly high especially in the younger age groups. Half the survey population (50.5%) consumed fried potatoes at least once a week. The addition of salt to meals is very widespread with 47% of the respondents reporting that they almost always add salt during cooking and 24% almost always add salt at table. The intake of beans or pulses is practised by 60% of the population. Skimmed milk consumption increases with age with a corresponding decrease in semi-skimmed milk (2.5% fat content) consumption. However, evaporated milk is still fairly popular particularly with older people.

Maltese (white) bread is the most preferred type of bread with a median consumption of two slices per day. The consumption of brown bread improves with increasing age and is more popular with women and with individuals with a higher level of education. Although vegetable oil seems to be increasingly popular, the consumption of olive oil decreases as age increases.

Sweet pastries are consumed at least once a week by 60% of the survey population across all age groups. Sugar intake is inversely proportional to the level of education with people having a higher education

consuming less sugar. Women tend to take less sugar with tea and coffee than men. Added sugar decreases as age increases in both genders. Over one fifth of the population reported drinking sugared soft drinks on a daily basis whilst only 16% of the population drank sugar free soft drinks.

The 2008 HIS only focused on the consumption of fruit and vegetables. Self-reported consumption of fresh fruit on a daily basis stands at 74%. Vegetable consumption is generally lower, with 50% reporting that they consume vegetables daily and 40% stating they consume vegetables between one and four times a week. In general, consumption of fruit and vegetables improves with age.

From the 2006 HBSC study, it was noted that whilst children aged 11-15 years report a moderate consumption of fruits, with 21% eating fruit daily, the consumption of vegetables is very low. In fact, only 6.2% of children consume vegetables every day. On the other hand, consumption of energy dense foods is very high with 30% eating sweets daily and 40% having soft drinks everyday.

Whole milk is still being consumed at a higher rate than skimmed milk at 11-15 age group with 24.28% having whole milk daily in comparison to 11.3% having skimmed milk. Fatty food consumption including french fries is high. Another problem is frequent snacking. From the HBSC study, 30% of these children reported snacking whilst watching TV. Fast food consumption was relatively high with 6.9% having such food 2-4 times a week and 22% eating fast food once a week.

The *Food Consumption Survey* (Malta Standards Authority, 2010) is the first study to measure individual consumption using a five day food diary in a sample of over a thousand adult participants. An important finding is the significant consumption of sweets, biscuits and chocolate for breakfast, morning and afternoon snacks amongst participants. Pasta is very frequently consumed for lunch and dinner, while soft drinks are consumed in equal portions to water and hot drinks during dinner. About 25% of adults consume a fresh fruit with lunch.

## 4.4 Targets for 2020: Nutrition

The *Strategy for the Prevention and Control of Non-communicable Diseases in Malta* (2010) sets a number of targets to achieve a healthier diet. These are to:

### **Reduce the frequency of intake of processed meat products, which currently stands at 15% daily by 5%**

According to the latest data available, processed meat products are very popular especially in the younger age groups. These are associated with a very high fat content.

### **Increase the frequency of intake of fish by reducing the percentage of the population who never consume fish by 20% from the current level of 41.6%**

Although fish is readily available, its consumption is very low.

### **Increase the proportion of the population who consume vegetables on a daily basis by 25% especially in younger age groups**

Fruit consumption on an almost daily basis is about 74% and vegetable intake is around 50%. The WHO and American FDA recommendations advocate the five-a-day regime of fruit and vegetables and local ongoing campaigns reinforce this message.

\* In the absence of more recent data, it is being assumed that current levels are the same as in 2002 for the intake of meat, fish and vegetables.

### **Reduce the consumption of sweets, sweet pastries, and sugared soft drinks of six times a week or more by 10%**

Consumption of refined, high calorie products on a daily basis is very high, particularly sugared soft drinks in the younger age group. This younger age group tends to consume large amounts of sweets and this practice should be addressed immediately.

### **Reduce salt consumption by 10% in the population**

The addition of salt both at table and while cooking (24% and 47%, respectively), is still highly prevalent. Reducing salt intake or substituting it with low-sodium alternatives to limit consumption to a maximum of 5g per day should be encouraged.

### **Reduce the mean daily intake of animal fat per capita by 10%**

Fat/oil products high in saturated fats are still being consumed fairly frequently while olive oil consumption is still very limited. A shift from oils high in saturated fats to healthier alternatives, high in unsaturated fats is desirable. The mean daily intake of animal fat per capita in Malta was 21.3g/person/day in the year 2005 according to FAOSTAT.

## 4.5 Tackling Obesity throughout all the Life Stages

The risk of developing chronic diseases increases with age as well as with increasing weight levels. The prevention of excess weight has to be tackled as early in life as possible and through all life stages (from birth up to old age) to reduce morbidity and mortality.

### 4.5.1 Promoting healthy eating in the early years up to the age of 4 years

WHO recommends that infants should be exclusively breastfed for the first six months of life and continued thereafter together with appropriate complementary foods (2010). Several studies have shown the importance of breastfeeding in reducing obesity later on in life (Gillman MW *et al.*, 2001). There is also evidence to suggest that infants who are weaned onto solid foods at an early age are more likely to be overweight later in childhood (Wilson AC *et al.*, 1998). Currently less than 40% of infants are being breastfed (WHO, 2010).

In Malta, information classes on breastfeeding are held both pre-natally at the Parentcraft Centre and post-natally via the Breastfeeding Clinic, with special attention being given to first-time mothers.

Informative leaflets on the introduction of solid and complementary foods are available to parents and carers. It is recommended that solids are started at six months of age since exclusive breastfeeding is advocated for the first six months of life to ensure the full maturation of the baby's immune system. Attard Montalto *et al.* (2008) showed that the national current rate of breast feeding at hospital discharge was around 60%. The study further reported that only 38% of babies were still being breastfed at six months. This figure is well below the Healthy People 2010 goal of 50% at six months. The *Breast Feeding Policy for Malta* published in April 2000 suggested several targets including efforts to increase the rate of breast feeding on discharge from hospital to at least 90% of babies and increasing the proportion of infants still breastfed at 4 months of age to at least 80%.

#### Areas for action

1. To promote exclusive breastfeeding and ensure that more babies are breastfed for at least six months (exclusively) and continued in the first years of life together with appropriate complementary foods.
2. To provide educational programmes on maternal and infant nutrition (including breastfeeding) for health professionals (family doctors, midwives, nurses and community pharmacists) so that they may transmit optimum information and support to all mothers.
3. To provide more education and support to pregnant women through augmented parentcraft courses on breastfeeding techniques and infant weaning as well as on the development of healthier lifestyles for themselves and their families.
4. To establish Mater Dei Hospital as a recognised baby-friendly hospital which promotes exclusive breast feeding.

5. To review the *Breastfeeding Policy for Malta*, followed by implementation and monitoring.
6. To update existing legislation to bring it in line with the *International Code of Breast Milk Substitutes* (WHO, 1981) and subsequent WHO resolutions.
7. To include knowledge on breastfeeding in the health/nutrition education programme within Personal and Social Development (PSD) curriculum in primary and secondary schools.
8. To promote the establishment of a breast-feeding friendly environment within our society.

#### 4.5.2 Promoting healthy eating throughout school years

The school environment contributes in a substantial way to children's upbringing and well-being. Improving the nutritional status of school-age children is an effective investment for future generations. The introduction of the *Healthy Eating Lifestyle Plan* (HELP) document (2007) in all state and most non-state schools has resulted in significant progress in making the school a health promoting environment.

The introduction of the *School Fruit Scheme* in 2010 was a joint initiative by the Ministries of Agriculture, Education and Health where all primary school children and those in kindergarten and childcare centres and nurseries are being offered a portion of fruit or vegetable free of charge once a week. Teachers emphasise the promotion of healthy eating and the benefits of fruit and vegetables also through farm visits and preparation of healthy meals. The preliminary evaluation of the first year of the School Fruit Scheme showed an encouraging response among schoolchildren.

In 2009, Malta joined the '*Nutrition Friendly School Initiative*' (NFSI) which was developed as a follow-up to the WHO Expert Meeting on Childhood Obesity held in Kobe, Japan (June, 2005). The aim of this project is to provide a framework for designing integrated school-based intervention programmes which address the burden of nutrition-related ill health, building on and inter-connecting with the on-

going work already started by various other agencies and partners. Schools offer many opportunities to promote healthy dietary patterns for children and also a potential access point in engaging parents and the community.

#### Areas for action

1. To enhance healthy eating among school children with parent/guardian involvement through the development of clear guidelines for parents and carers on the age-appropriate content of lunchboxes for school-age children.
2. To strengthen the HELP document by adopting it as national policy and to ensure the implementation and monitoring of the HELP guidelines within all schools, with particular reference to the choice of food products in school tuck shops and the creation of an overall environment that encourages the uptake of healthy balanced school-lunches and discourages the consumption of inappropriate and non-nutritious food.
3. To set up a healthy lifestyle programme targeting students by the provision of keep fit sessions, talks on healthy foods and weigh in sessions so that students are monitored and provided with support within the school environment.
4. To assess the feasibility of providing a regular healthy breakfast to all kindergarten children on the same lines as the *School Fruit Scheme* so as to educate the family about healthy breakfast options and expose the child to a regular, varied and nutritious diet.
5. To roll out the *World Health Organisation Nutrition Friendly School Initiative* with all state, church and private schools being eligible to participate.
6. To establish a competition and award on an annual basis rewarding schools for helping children to adopt healthy lifestyles on school premises.
7. To include more emphasis on the food chain in the PSD, Physical Education and Home Economics curriculum with particular attention to the importance of a healthy balanced diet as opposed to the consumption of energy-dense foods.
8. To promote healthy meals/snacks during extra-curricular school activities such as fund-raising activities, school bazaars, sports days, etc.
9. To assess the feasibility of regulatory measures to restrict access by children to nutritionally inappropriate meals and energy-dense snack foods from retail outlets located in the vicinity of schools.
10. To encourage media service providers to develop codes of conduct regarding inappropriate audiovisual communications on foods and beverages, accompanying or included in children's programmes.

#### 4.5.3 Promoting healthy eating in adulthood

Food choices by consumers are influenced by factors such as quality, price, taste, culture, availability, accessibility and convenience. Consumer education, the development and implementation of food-based dietary guidelines and adequate nutrition labelling together with increased opportunities for physical activity can all help to improve the nutritional status of people (WHO, 2008).

##### 4.5.3.1 Lower Socio-Economic Groups

Lower socio-economic groups are more likely to be overweight and obese. The provision of educational information alone is relatively ineffective among lower income groups and in fact may increase inequalities. More focused intervention such as through maternal and child health care and social support services (Robertson *et al.*, 2007) may be effective.

The creation of incentives to encourage higher intake of fruits and vegetables is also recommended in the *National Cancer Plan 2011-2013* which was launched in February 2011 and which is being implemented.

##### 4.5.3.2 Alcohol and obesity

The relationship between alcohol and obesity is still controversial (Yeomans MR., 2004). The relationship between the body mass index of individuals who drink alcohol and the 'quantity' and 'frequency' of alcohol

they drink was studied by the National Institute on Alcohol Abuse and Alcoholism (Breslow R., 2005). This concluded that people who drank the smallest quantity of alcohol had the lowest BMIs. However, most prospective studies have concluded that alcohol intake and weight change are not associated. There are known errors in acquiring information on alcohol consumption and confounding caused by other lifestyle factors such as smoking and physical activity. The 2008 *Health Interview Survey* reported that during the previous year 5% of respondents drank alcohol on a daily basis. The effects of the relationship between alcohol consumption and weight change should be included in awareness campaigns on the detrimental effects of excessive alcohol.

#### **4.5.3.3 Adults and older people living in the community**

The number of older people globally is growing in both absolute and relative terms (WHO, 2010). Obese older people are more likely to suffer morbidity and disability due to diseases such as type II diabetes, osteoarthritis, stroke and heart disease (Seidell JC *et al.*; 2000). The greatest challenge over the coming years is maintaining health and maximising the number of years lived free from disability. A healthy lifestyle, especially eating well and remaining active helps the individual to stay fit and healthy for as long as possible.

#### **Areas for action**

1. To set up a Task Force led by the Ministry responsible for Health to develop action plans on the introduction of agreed mechanisms to reduce salt and sugar, limit saturated fat and eliminate trans-fat content in local food products.
2. To set up a *Healthy Food Scheme* using colour coding so that healthy food is easily identifiable to the population. The aim will be to increase the visibility, appeal and pricing of healthy foods in food stores whilst reducing the supply of energy-dense food and drinks.
3. To use social marketing techniques to promote moderation in food consumption and to work with stakeholders to establish protocols to

standardise portion sizes in ready meals and snacks and in food outlets.

4. To work with all stakeholders in the hospitality industry to enhance the preparation and increase the availability of nutrient-dense healthy meals as attractive and tasty options within their outlets, and increase the options available on children's menus.
5. To establish partnerships with the wider community and in association with local councils and NGOs for the provision of more nutrient-dense food and beverage options in the community.
6. To work towards the clarity of labelling on food and drink products such that the content of products is clear and easily understood by consumers.
7. To increase the complement of registered nutritionists and dieticians and recruit food community workers, to act as a resource within healthcare and community settings.
8. To tighten legislation on alcohol advertising and improve the enforcement of restrictions on the sale of alcohol to children and adolescents.

#### **4.5.4 Promoting healthy eating in the workplace**

The workplace is where many adults spend most of their life. Efficiency and productivity of the workplace has been positively associated with an increasingly healthy environment (McDaid, D 2008). Rising levels of obesity make a significant and growing contribution to levels of illness and subsequent sick absences in the workforce (Huse, DM 2007). A healthy, motivated workforce is essential for high productivity levels. Most employers are already aware that a healthy workforce is important to their continued success, and some are now active in supporting their employees in achieving a healthier lifestyle. The primary challenge is to raise awareness amongst all employers of the potential costs of obesity and related chronic diseases to their business, and of working with them in implementing policies and practices that can contribute to promoting and maintaining a healthy lifestyle among their employees, including achieving and maintaining a healthy weight.

#### Areas for action

1. To set up a *Healthy Workplace Scheme*, which provides support and incentives for employers to promote healthy eating in the workplace and support weight management programmes. To introduce national guidelines on food provision within canteen/cafeteria facilities at workplaces which will promote less high-energy dense foods and more healthy options that are low in fat, sugar and salt.

#### 4.5.5 Promoting healthy eating in hospitals, institutes and homes for older people

Hospitals and homes for older people should be showcases of good practice and ensure that all food offered is in line with healthy eating guidelines, especially in view of the already compromised health status of many older persons.

The Health Promotion and Disease Prevention Directorate has worked on promoting healthy eating in hospitals and homes for older people through regular educational events. The Meals Board within the Health Ministry includes a nutritionist and an Environmental Health Officer, and has the remit of ensuring that menus served within homes meet food safety standards and healthy eating guidelines in line with the *CINDI Dietary Guide, 2000*. The Health Care Standards Directorate is monitoring nutritional guidelines put in place in 2009 for homes for older people as part of the licensing procedures for both public and private homes.

#### Areas for action

1. To update and monitor the implementation of healthy dietary guidelines for use in homes for older people to ensure that the range of products and food portion sizes offered in meals and snacks provide an adequate amount and balance of nutrients.
2. To introduce regulations to ensure that all canteens and cafeterias within institutions, hospitals and homes for older people are in line with healthy dietary guidelines, with the majority of food sold favouring healthy eating principles.
3. To plan and implement training programmes on healthy eating and physical activity amongst care professionals, thus re-enforcing and supporting patients and residents towards adopting healthier eating habits.

#### 4.6 Conclusions

Government is committed to provide the necessary support for the intense intersectoral effort that is required to shift societal norms towards an increased demand for and affordability of, nutrient-dense food options and the consumption of smaller portions of high energy-dense foods. The aim of this Strategy is to gradually achieve an increasing consumption of healthier food, accompanied by a gradual reduction of energy-dense food availability. This will be achieved through a better educated public that is becoming increasingly health-conscious and through the creation of the appropriate societal environment to facilitate this shift.

## Chapter 5

# Promoting Physical Activity



## 5.1 Introduction

Physical activity (PA) is generally defined as any bodily movement produced by skeletal muscles which results in energy expenditure above resting level (Pate *et al.* 1995). As a key determinant of energy expenditure, physical activity is fundamental to energy balance and weight control. There is indisputable evidence of the effectiveness of regular physical activity as a modifiable risk factor in the prevention of obesity as well as cardiovascular disease, hypertension, diabetes, osteoporosis and osteoarthritis, colon cancer and breast cancer in women and premature death from any cause (WHO, 2004). Sedentary behaviour itself is an independent risk factor for chronic disease (Owen *et al.*, 2009). Studies have shown that pre-school children who watch television/DVDs for more than 2 hours per day have a higher risk of being overweight (Menzoni *et al.*, 2007). Long hours of TV watching and computer use (screen time) in adolescents and adults in both sexes have also been shown to be associated with obesity (Shields & Tremblay, 2008).

## 5.2 The role of the environment

Recent literature has focused on the built environment playing an important role in influencing obesity by creating a climate that promotes increased energy consumption and a reduction in energy expenditure (Papas *et al.*, 2007). Access to physical activity facilities has been shown to be linked to energy expenditure whereby people of all ages living further away from recreational facilities are more likely to be overweight (Mobley *et al.*, 2006).

The 'walkability' of a neighbourhood, which in turn depends on connectivity, net residential density, land-use mix, street accessibility and provision of sidewalks also correlates with BMI and physical activity of populations (Strum and Datar, 2006; Doyle *et al.*, 2005). There is also evidence that disadvantaged groups usually live in worse environments with respect to places to exercise. This is compounded by decreased access to outlets selling affordable healthy food, problems of traffic or crime-related safety and aesthetic problems (Lovasi *et al.*, 2009).

Environmental interventions to increase access to physical activity suggest that creating or improving access to places for physical activity can result in a significant increase in the number of people who are active at least three times a week (Health Development Agency, 2005). Significant positive associations have also been found between car use and the risk of obesity (Franck *et al.*, 2004).

### Areas for Action

1. To enhance Physical Activity through national policies that target changes in a number of sectors thereby promoting physical activity both for relaxation as well as for everyday activities.

## 5.3 Recommended type and duration of physical activity

The evidence on health benefits of physical activity leads to the recommendation that individuals should engage in adequate levels of physical activity throughout their lives. At least 30 minutes of regular, moderate-intensity physical activity on most days of the week reduces the risk of cardiovascular disease and diabetes, colon cancer and breast cancer. Muscle strengthening and balance training can reduce falls and increase functional status among older adults. More activity may be required for weight control (WHO, 2004).

Definitions of moderate and vigorous Physical Activity:

**Moderate physical activity** is the type of activity that requires a moderate amount of effort and noticeably accelerates the heart rate; examples include: brisk walking (6km/hr), cycling (<16km/hr), ballroom dancing, tennis (doubles), general gardening, housework and domestic chores, carrying /moving moderate loads (<20kg) (CDC, 2010; WHO, 2010).

**Vigorous physical activity** requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate. Examples include: running, walking/climbing briskly up a hill, cycling

(>16 km/hr), heavy gardening (digging & hoeing), aerobic dancing, fast swimming, competitive games (basketball, volleyball, football), tennis (singles), carrying/moving heavy loads (>20kg) (WHO, 2010). The *talk test* is a simple means of measuring relative intensity. As a rule of thumb, during moderate-intensity activity one can talk, but not sing (CDC, 2010). During vigorous-intensity activity, one will not be able to say more than a few words without pausing for a breath (CDC, 2010).

### *Recommended type and duration of physical activity - Children*

Evidence on appropriate interventions for the prevention of obesity in pre-school children is lacking. A study in pre-school children indicated that physical activity at this age (mean age 4.2 years), did not reduce body mass index but significantly improved motor skills, which may increase future participation in physical activity or sport (Reilly *et al.*, 2006). WHO currently promotes the following recommendations which have been adapted from evidence based review performed by the American SportsMedicine/American Heart Association (2007) and Strong *et al.* (2005):

*“Children (from 5 to 18 years of age) should undertake at least 60 minutes of developmentally appropriate moderate-intensity physical activity per day, including activities that produce high physical stresses of the bones, and improve muscle strength and flexibility. The recommended time can be split up into shorter periods of ideally not less than 10 minutes (WHO, 2007).”*

The *European Youth Heart Study* (2006) involving over 1700 children from Denmark, Estonia and Portugal also suggested that the currently held recommended level of exercise for children may be insufficient to prevent future health problems and so 90 minutes of moderate intensity exercise a day is being recommended by these authors (Andersen *et al.*, 2006).

### *Recommended type and duration of physical activity – Adults and Older adults*

*Adults (18-65 years):* The WHO promotes the general recommendations that adults (18-65 years) perform at least 30 minutes of moderate-intensity physical activity 5 days per week; or 20 minutes of vigorous-intensity physical activity 3 days per week; or an equivalent combination of moderate and vigorous-intensity physical activity; together with 8-10 muscular strengthening exercises (8-12 repetitions) at least 2 days per week. However, for many people, 45 – 60 minutes of moderate-intensity physical activity per day is necessary to prevent weight gain or reduce overweight (WHO, 2007). As with children, the recommended time can be split up into shorter periods of ideally not less than 10 minutes (WHO, 2007).

*Older adults (>65 years):* Older people should be encouraged to keep moving and retain their mobility and their lean body mass through daily activity. The recommendations for adults are also appropriate for older adults with due consideration for the intensity and type of physical activity appropriate for older people (WHO, 2010). Additionally, specific activities that promote improved strength, coordination and balance are particularly beneficial in this group (Department of Health London, 2004).

### **Areas for Action**

1. To develop a National Physical Activity Action Plan:  
Although strategic actions aiming to increase the level of physical activity undertaken by the Maltese population have already been addressed in some detail within the context of the *National Environment and Health Action Plan* (NEHAP, 2006-2010), the *Strategy for the Prevention and Control of Non-communicable Diseases in Malta* (NCD, 2010), the *National Cancer Plan* (2011), *Environment and Health Performance Review* (2009) and other policy documents such as *Reshaping Sport* (2007), the *Local Plans* and *Structure Plans Review* (MEPA) and expert

recommendations (WHO,2007) the development of a national physical activity action plan and guidelines to further support this Strategy and related policies and strategies is considered essential.

### 5.4 Physical activity levels in the Maltese population

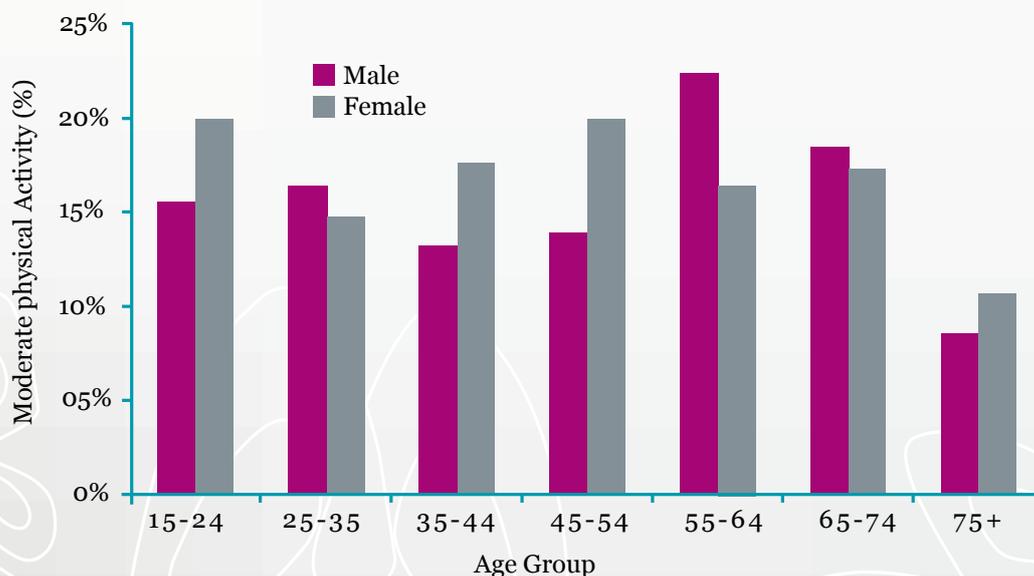
Results from the *Health Interview Survey (2008)* quantify the level of physical activity carried out in Malta. A score was calculated using data collected regarding the number of minutes spent weekly on vigorous and moderate activity as well as walking. This equation was weighted to represent the level of energy employed in each form of activity. This score classifies respondents as having a low, moderate or high level of physical activity per week. 16.6% of respondents carried out a moderate level of physical activity, while 26.9% carried out a high level of physical activity per week. Males, especially in the younger age groups, reported carrying out a higher level of physical activity than females, while females carried out more moderate physical activity than males (Figure 6).

A study conducted by the European Centre for Educational Resilience and Socio-Emotional Health with students at the University of Malta has shown that only 37% of respondents engage in regular exercise, whereas 34% admit to rarely, if ever, getting any exercise (Cefai C, Camilleri L, 2009).

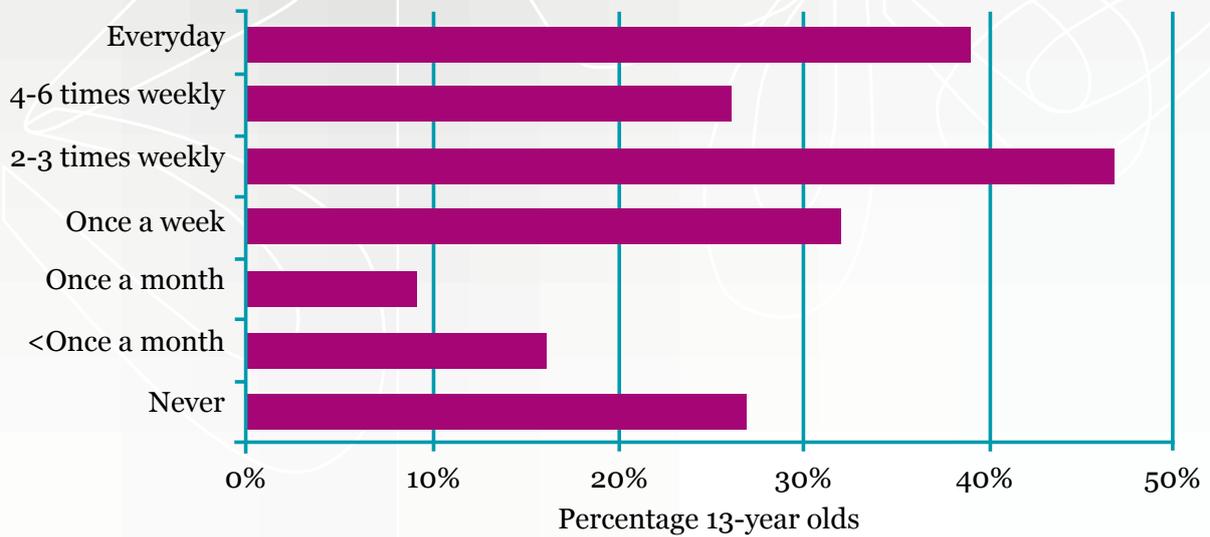
The *Health Behaviour in School Children* study (2006) reports that up to 14% of Maltese 13 year old children never undertake any moderate-to-vigorous physical activity (MVPA); 4.5% participated in MVPA once a month and 8% perform MVPA at a frequency of less than once a month (Figure 7).

The *European Child Growth Surveillance Initiative (ECOSI)* data collected by the School Health Services in 2008 was used to compare the amount of physical activity carried out in public, church and independent schools at primary level (Figure 8). The figure shows that in 62% of public schools, children are allowed between 61 to 120 minutes of PE per week. Half of Church schools offer their students less than 1 hour of PE per week. Half of independent schools offer 61-120 minutes of PE per week and almost half offer more than 2 hours of PE per week.

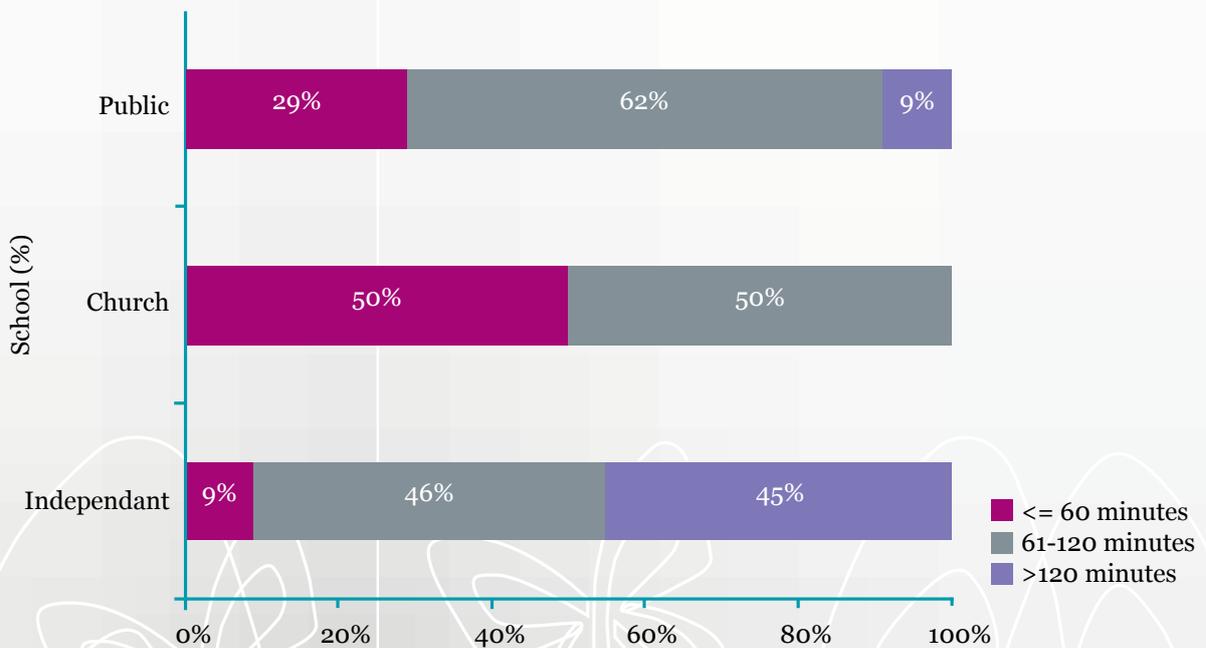
Figure 6. Participation in a moderate level of weekly physical activity (HIS, 2008)



**Figure.7. Frequency of Moderate-to Vigorous Physical Activity in 13 year olds (HBSC 2006)**



**Figure.8. Time allocated to Physical Activity per week in Primary Schools in Malta (ECOSI Malta 2008)**



The 2002 and 2005 *Eurobarometer* studies on Physical Activity and Health and Food respectively report Malta as scoring the lowest in a comparison undertaken with the EU-15 (2002) and EU-25 (2005) member states for the number of days of moderate and vigorous physical activity, lowest duration of physical activity during the day and lowest average walking time during the week (*Europa Press Release RAPID*, 2007).

The *Household Travel Survey* carried out by Transport Malta in May 2010 indicated that walking (7.6%) and cycling (0.3%) are not the most popular modes of travel, as opposed to car use (74.6% of all trips). These figures show a sharp drop in the walking mode from the results of the *Household Travel Survey* carried out in 1998 (10.8%) and a rise in car use (70.2% in 1998). Nevertheless, the survey showed that in areas where car restraint action was implemented, such as Valletta, the trends have started to change, with the share of car trips arriving in Valletta dropping from 52.2% in 1998 to 35.1% in 2010. However, this was also accompanied by a drop in the share of the walking mode from 9.9% to 6.9% (*National Household Travel Survey, 2010*).

Overall, there is a heavy dependence on car use in the Maltese islands; as at end of December 2009, the stock of licensed vehicles on the islands stood at 300,347, of which 76.3% were private vehicles (NSO, 2010).

## 5.5 Targets for 2020: Physical activity

The *Strategy for the Prevention and Control of Non-communicable Diseases in Malta* (2010) outlined a number of targets related to physical activity and a healthier diet. These are:

**To increase the proportion of the Maltese population who carry out moderate or high level of physical activity daily or on most days, from the current 43.5% to 70%**

**To reduce the proportion of children and adolescents who never perform any exercise by 5%.**

The Strategy aims to shift all those within the 'Low level of physical activity', and 'Moderate level of physical activity' categories to the 'High level of physical activity' category.

**To increase the proportion of young people performing regular exercise from 37% to (at least) 50% by 2015 and 80% by 2020**

## 5.6 Institutional set up: Physical Activity

*Ministry for Health, Elderly and Community Care*

The Health Promotion and Disease Prevention Directorate (HPDP) is the main entity responsible for the promotion of healthy lifestyles amongst the population, by working in partnership with other ministries and external stakeholders. It runs free weight management and aerobics sessions for high risk individuals, and organises ad hoc events in different communities to encourage physical activity.

*Ministry of Education and Employment*

This Ministry is a key player by providing physical education in schools, national sports programmes and facilities, involvement in organised physical activity in the community (sports clubs, nurseries) as well as in the education and training of physical educators and coaches.

The current recommendations by the Department for Curriculum Management and e-learning for Physical Education (PE) and Sport in schools stand at four 30 minute sessions per week. However, since these lessons are carried out mainly by peripatetic teachers in primary schools, fewer lessons than recommended are actually held. All secondary school students have two lessons per week in Forms 1 and 2 and one lesson per week in Forms 3, 4 and 5. The *National Audit Office (2010) Performance Audit report on Physical Education (PE) and Sport in Maltese State Primary and Secondary Schools* recommends that the revised *National Minimum Curriculum* includes a requirement of 2 hours of PE to be held weekly in all Primary and Secondary Schools, in line with the Ministry of Education (2005) target for 75% of children to reach this uptake level of PE and Sport by 2010. These targets, moreover, state that 100% of children and adolescents in primary and secondary schools between the ages of five and sixteen years should have 3 hours per week of quality PE and Sport by 2015.

Standard provision and regulation in sports falls within the remit of the Parliamentary Secretariat for Youth and Sport. Kunsill Malti għall-iSport (KMS) has a very important role in promoting sport and physical activity. KMS has established a very positive relationship with the Education Division and have set up the *Community Sports Programme (CSP)* and the *After School Sports Programme* which will be extended to the post-secondary schools including MCAST and University (*Reshaping Sport, 2007*). KMS has also been successful in creating partnerships with other stakeholders as part of the *Sports for All* initiative – one example is the regular organisation of bike rides around the islands for persons of all ages (KMS media release, 2010).

### Local Government

The role of Local Government in promoting Health Enhancing Physical Activity (HEPA) is essential in that the Local Councils are largely responsible for the infrastructure and the creation of favourable opportunities for the availability of sport to the whole community (*EU Physical Activity Guidelines, 2008*).

Local councils have taken on various initiatives such as the organisation of activities provided by the private sector such as aerobics and dancing sessions for all ages on their premises, and the opening of school gyms to the local community after school hours.

Creating more space to accommodate families with young children will help promote physical activity as a family activity. A particular problem is the lack of walkability within the built environment which discourages walking during everyday life in town and village centres. The walkway in St Lucia is recognised as an example of good practice as it offers a passageway where people of all ages can walk or exercise safely. The ‘*Move for Health*’ project by Health Promotion and Disease Prevention Directorate in collaboration with local councils is another example of good practice.

### Private Industry and stakeholders

A number of gyms are available across Malta which provide facilities for physical activity guided by fitness instructors. The Malta Exercise, Health and Fitness Association (MEHFA) is a non-profit making NGO aimed at encouraging people in Malta to be more active, more often, through a series of activities.

### Areas for Action

1. To revise the national curriculum to include at least 30 minutes of daily Physical Activity during official school hours to be increased to 3 hours per week by 2015 (AHA, NAO, 2010).
2. To transform school yards and recreational areas to facilitate the uptake of physical activity during breaks.
3. To support the proposed *National Physical Activity Guidelines* for school children and young people through initial and in-service teacher training.
4. To increase knowledge of children, parents, carers and teachers on the benefits of Health Enhancing Physical Activity (HEPA).
5. To encourage children and parents to use a screen time log, reduce the number of hours of watching TV, use of computer/video games to

not more than 2 hours per day and to encourage sit down meals as family time as opposed to TV dinners.

## 5.7 Current barriers to performing involuntary and voluntary physical activity

A multi-stakeholder workshop organised by ICCO in 2009 acknowledged that there seems to be a slight paradigm shift in the awareness of the health benefits of Physical Activity locally. However, the behaviour change that should necessarily accompany the shift is not yet present. The barriers to this were identified as being mainly the availability of free resources, lack of infrastructure, the cost of gym memberships, time constraints and a highly competitive mindset in both adults and children which does not allow space for physical activity. General inactivity resulting from the availability of technological equipment was also seen as a problem. General fitness also seems to be in competition with the easier options, for example, the promotion of weight loss aids (*Physical Activity across all ages of the Population: Report of a Workshop 2009*).

As described by the *EU Physical Activity Guidelines* (2008), participation in non-organised or self-organised activities is often dependent to geographical, socio-economic and cultural limitations which may require specific interventions:

**Geographical limitations:** The geography of the area determines the availability of and proximity to open spaces (e.g. living by the sea, trekking paths, cycle paths) or specific sites which are suitable and appealing for open-air physical activity such as walking, jogging and cycling, in any town or residential environment that can stimulate and provide occasions for physical activity to be carried out during free time.

**Socio-economical limitations:** economic conditions can represent a strong limiting factor to many self-organised activities such as regular attendance at fitness classes, gyms, swimming pools, sailing, horse-

riding, as these are often related to relatively high costs. This may exclude participation by the lower socio-economic groups, in which there is typically a higher incidence of overweight and obesity (WHO, 2007). Specific interventions such as the initiative by the Health Promotion and Disease Prevention Directorate to provide free fitness classes at a number of participating Local Council premises are effective in facilitating access to all, regardless of their economic conditions.

**Cultural limitations:** focused interventions may be required to raise awareness of the physical and mental health value of physical activity and to motivate sections of the population to find the most suitable types of leisure physical activity for them.

### Areas for Action

1. To review the use of public spaces so that they can be utilised to maximise the encouragement of physical activity uptake.
2. To support Local Councils and other stakeholders in developing opportunities to complement the national infrastructure for physical activity by providing better walkways built to proper standards, parks, more pedestrianised areas and creatively utilising spaces for physical activity within their locality.
3. To enhance awareness of shared spaces on our roads so that different road users such as car and bicycle users and pedestrians show more respect for each other in order to allow safe use by all.
4. To work with stakeholders to widen the existent opportunities of afterschool sports and dance programmes.
5. To provide opportunities and incentives to encourage NGOs, local councils, schools, workplaces, sports clubs, gyms and the private sector to provide physical activity classes, active play and sports which are both accessible and affordable to the general population.
6. To work with stakeholders to ensure the inclusion of persons living with disability in physical activity opportunities.

7. To work towards the improvement of the existing cycle lanes and creation of further networks wherever possible and providing the necessary regulatory structures to ensure their safety.
8. To explore the possibility of introducing incentives to promote the uptake of physical activity.
9. To raise awareness on the importance of physical activity on the health status of the individual among health professionals.

### 5.8 Physical activity in the workplace setting

The implementation of workplace plans or programmes that include physical activity will benefit both worker and employer (*EU Physical Activity guidelines*, 2008). These plans are an investment with overall gains in terms of well being of staff, reduction of sick leave, reduction of risk factors for chronic diseases and skeletal-muscle disorders.

Workplace health promotion entails not only clear goals and employee participation, but just as important are management commitment, a supportive environment and regular evaluation. A number of workplaces already have a gym in place for employees, while others offer subsidised gym membership to their employees. These entities regularly request the services of the Health Promotion and Disease Prevention Directorate to develop Healthy Living initiatives at their place of work.

#### Areas for Action

1. To strengthen and expand workplace health promotion initiatives which specially target both nutrition and physical activity.

### 5.9 Physical activity through sport organisations

Sport organisations including federations, associations and nurseries are generally more oriented towards competitive sport. Such organisations are encouraged to consider the promotion of sport for all and the impact of sport on public health, social values, gender equality and cultural development. Sport organisations contribute to the social well-being of communities. Developing partnerships with sport organisations will enable the sharing of useful resources in a cost-effective manner to help meet the needs of the population for physical activity.

#### Areas for Action

1. To establish partnerships with organisations to increase awareness on the role of nutrition and physical activity on healthy lifestyles and provide sessions of enjoyable physical activity which are available to the general population.

### 5.10 Conclusion

Collaboration and action on a multi-sectoral basis is required to increase the facilities and opportunities for increased physical activity and sports for both children and adults throughout the life course. The resultant benefits will be the reduction of excess weight and related chronic diseases, as well as increased productivity, improved mental health, quality of life, and general well-being.



## Chapter 6

# Healthcare Services



Prevention and control of overweight and obesity requires the provision of specific services, tailored towards different groups. This is particularly important for vulnerable groups (such as those on low incomes) and people at life stages with an increased risk for weight gain (such as during and after pregnancy, at the menopause or when stopping smoking).

## 6.1 Aims of service provision

- To enhance access to a personalised service for overweight and obese persons of all ages, tailored to their needs and which supports them in achieving a real and sustained weight loss followed by the maintenance of a healthy weight.
- To enhance access to appropriate advice and support on healthy lifestyles in order to encourage people with a healthy weight to maintain it for life, and to prevent those who are overweight from adding on more weight and becoming obese.

## 6.2 Reorientation of the Health Services

The *Ottawa Charter for Health Promotion* calls on the Health Sector to ‘move increasingly in a health promotion direction, beyond its responsibility for providing clinical and curative services’ (Ottawa Charter 1986). Health professionals hold a unique opportunity, in their everyday function, for the conveying of practical advice to patients and families on the benefits of increased levels of health-enhancing physical activity and simple nutrition advice. The advice may take the form of simple information, skills in behaviour change and/or referrals to appropriate services. Health professionals need to be encouraged and facilitated in order to dedicate more time to prevention. Health Professionals need to be trained in health promotion methods in order to be able to assume this role (Naidoo & Orme, 2000).

### Areas for Action

1. To increase the inclusion of knowledge on healthy choices and behaviour change strategies in the initial training and continuing education for all health professionals.

## 6.3 Development of Community Level Services

Multi-component interventions are the preferred choice for the prevention and management of obesity.

### 6.3.1. Weight management programmes

Weight management programmes include behaviour change strategies to increase people’s physical activity levels or decrease inactivity, improve eating behaviour and the quality of the person’s diet, and reduce overall energy intake. Weight management interventions have been found to be more successful when the programme goals are aimed specifically at weight management rather than at preventing cardiovascular disease or improving general health status (Kremers *et al.*, 2010).

A number of studies have shown that the body weight and attitudes of the spouse can have a major impact on the amount of weight lost and on success in weight maintenance (Black DR, Threlfall WE, 1989).

### Areas for Action

1. To increase the provision by the Health Promotion and Disease Prevention Directorate of regular and accessible weight management programmes for adults with BMI > 25 in different settings, with a particular emphasis on communities with a higher risk.
2. To issue guidelines on messages to be delivered in weight management courses carried out in both the private as well as the public sector.
3. To strengthen and diversify the provision of up to date advice by the Health Promotion and Disease Prevention Directorate in order to ensure that it is a reputable and easily available resource for the population.

### 6.3.2 Physical activity programmes

Social support networks such as exercise groups to encourage behaviour change have been found to be cost-effective measures when combined with other community-based physical activity interventions (Muller et al., 2008).

#### Areas for Action

1. To enhance Health Promotion and Disease Prevention Directorate – organise regular and accessible physical activity programmes and walking schemes especially for adults with BMI >25 for all ages and in different settings.
2. To work with stakeholders to encourage active transport action groups e.g. walking bus, cycle to work.

### 6.3.3. Cookery clubs in the community

Research shows that families in lower income groups may benefit from support in developing skills to cook healthy and low cost meals for the family which are culturally and socially acceptable. Cookery clubs may be combined with a walking programme so that a multi-component programme can be offered.

#### Areas for Action

1. To set up cookery clubs at community level in schools or local councils, workplaces, mother-and- baby clubs, day care centres etc.
2. To set up after-school cookery clubs for adolescent children in order to provide practical education on nutrition and healthy eating.

### 6.3.4. Provision of appropriate lifestyle advice by health professionals

Health professionals in the public and private sector are a major source of advice on diet, weight and physical activity. It is important that these professionals have the appropriate training and experience which will enable them to effectively motivate people to change. Training in these areas, to an extent which is commensurate with the degree of interventions made, is therefore essential in order to ensure that consistent, professional and up to date advice is given to patients.

#### Areas for Action

1. To work with stakeholders to include health promotion and prevention in undergraduate curricula for all health professionals.
2. To work with stakeholders to provide continuing professional development training in effective health promotion to all health professionals.
3. To work with stakeholders to supply health care workers with the necessary resources to encourage weight loss and healthy living.
4. To set up post secondary training courses for care professionals in order to increase the human resource pool in the sector.
5. To work with stakeholders to develop a national curriculum and certification in relation to the training of professionals, facilitators and advisors in the field of weight management in the field of nutrition, weight management and physical activity.
6. To ensure that only persons certified as having received the relevant training in their field of activity provide such a service to the people.

### 6.3.5 Generalised Services delivered from Primary Care

Health professionals in primary care (both the public and private sectors) are the first points of contact with the general public and enjoy enormous public confidence. They are in a unique position as they have regular, repeated easily accessible contact with the general population. These professionals are therefore a crucial link in any policy designed to promote a healthy weight for life.

#### Areas for Action

1. To provide health professionals with guidelines on healthy choices i.e. nutrition, exercise and alcohol, so that a uniform and coherent message is communicated.
2. To provide regular CPD events specifically dealing with overweight and obesity prevention and management issues, specific training on diet and nutrition, physical activity and health behaviour change.

3. To provide health professionals with the necessary resources to advise people on healthy choices.
4. To ensure that health professionals proactively screen for and manage risk factors associated with overweight and obesity such as hypertension, hyperlipidaemia and diabetes.
5. To ensure that all primary and secondary students are measured at the beginning of each scholastic year and to ensure monitoring and appropriate referral for overweight and obese children, and regular communication and lifestyle advice and help for the family.

## 6.4 Development of Specific Services

### 6.4.1 Management of Overweight and Obesity in Adults

The treatment of overweight and obesity relies on reversing the energy balance on a long term basis and can be achieved through various modalities, which include dietary interventions, regular physical activity, and appropriate medical or surgical interventions.

In view of the complexity of the factors involved and the variety of modalities, multidisciplinary teamwork is essential for the effective delivery of such a comprehensive programme of intervention. A holistic approach to the overall management of the patient is essential as is the establishment of an intensive and ongoing interaction between the professionals involved and the patient.

#### Areas for Action

1. To set up specialised Obesity Clinics run by a multidisciplinary team of health professionals in the Primary Health Care sector which will provide initial medical assessment of the referred patients and the necessary follow-up including specialist referral if necessary, dietetics and exercise capacity assessment and prescription, psychological support and behavioural interventions as required and evaluation of the need for and referral for more invasive therapy as may be deemed necessary. Specialised staff required will include doctors, dieticians, psychologists, behavioural therapists, and physiotherapists.
2. To carry out a health technology assessment and assess the feasibility of including bariatric surgery on the list of services available from the public health care sector.

### 6.4.2 Management of Overweight and Obesity in Children

The association between overweight and obesity in childhood and that in adults increases with earlier age of obesity onset (Guo, S.S., *et al.*, 1994). It has been shown that 25-50% of obese adolescents develop into obese adults (Dietz, W. *et al.*, 1993) so that the earlier the age of onset of obesity, the greater is the likelihood of obesity in adulthood with its associated long-term health complications.

Specific intervention strategies should therefore target children under 11 years of age, as positive results have been found to be optimal before children enter puberty. Interventions after this age have to date not been shown to have any significant success (Ebstein, L.H. *et al.*, 1994).

#### Areas for Action

1. To set up a multidisciplinary paediatric weight clinics aimed at creating a supportive environment that helps overweight or obese children ( above percentile 85) and their families make lifestyle changes.

This treatment programme may include a complete evaluation by a multidisciplinary team to understand the potential causes and complications of the child's condition, family behavioural counselling with the participation of the family members in the weight reduction programme as deemed necessary and the establishment of a family-centred plan to achieve weight reduction goals with subsequent weight maintenance strategies.

In the management of childhood obesity, prudence is key, and consideration needs to be given when developing interventions to risks of malnutrition, eating disorders and risk of isolation. A clear and consistent message that everyone is at risk of obesity and the need to generate family awareness

of the need for healthier choices will help achieve the aim of healthy weight without any unnecessary complications. Combined behavioural lifestyle interventions have been shown to produce a significant and clinically meaningful reduction in overweight and obesity in children and adolescents (Oude Luttikhuis, H., *et al.*, 2009; *NICE guidelines*, 2010).

## 6.5 Conclusion

Health professional-led interventions in primary and secondary care and community settings that focus on diet and physical activity or general health counselling can support weight loss or maintenance of healthy weight. A specific focus targeted at children requires a multi-disciplinary approach with the committed involvement of the family.



## Chapter 7

# Implementation of the Strategy



## 7.1 Human Resources

In order to achieve the ambitious targets set within this strategy, the capacity of different professionals within the workforce must be strengthened, both in terms of skills and numbers. The intersectoral nature of this strategy has implications for the workforce of several ministries and sectors. A needs analysis to identify gaps in the number and skills of the workforce within different areas will be carried out by mid-2013.

Within the Ministry for Health, Elderly and Community Care, specific skills within the current workforce need to be developed or strengthened as well as new specialised staff recruited. Continuing professional development of health professionals need to be strengthened with a specific focus on prevention, communication and behaviour change.

Within other Ministries and sectors, training on the health effects of public policies need to be instituted where missing and strengthened where already present. A particular focus on health impact assessment is required.

## 7.2 Surveillance and Research

Surveillance and research in the area of overweight and obesity are a priority and an integral part of this strategy. They will enable the translation of policy into deliverables, identify any unintended outcomes and allow any necessary amendments or adjustments to the priorities set.

### 7.2.1 Surveillance

The aim of surveillance is to monitor the prevalence of overweight and obesity within the population, as well as trends, and to examine the effectiveness of interventions in increasing the uptake of a nutritious diet and health enhancing physical activity. Actions implemented in all age-groups and settings will be monitored to measure progress towards achieving the targets set within this strategy. New health services will be accompanied by a monitoring and evaluation

framework in order to make sure that they are achieving their stated objectives and to document the quality of the services and their outcomes.

The Health Information and Research Directorate and the Health Promotion and Disease Prevention Directorate, within the Ministry for Health, the Elderly and Community Care already carry out surveys periodically to monitor the key targets. In the first instance, the *European Health Interview Survey* is carried out every five years and monitors self-reported weight and height in the adult population, together with risk factors and behaviour. Similarly, the Health Behaviour in School-Children and the ECOSI are international periodic surveys that monitor the weight of children and adolescents in Malta.

The Health Information and Research Directorate has carried out a pilot *Health Examination Survey* in 2010. This survey will be run in conjunction with the European Health Interview Survey. Surveillance in school children will be strengthened by the use of regular anthropometric studies.

Improvement in measurements of physical activity for population health surveillance is necessary. Studies that are already carried out locally which include data collection on physical activity will be sustained and enhanced.

Specific studies to monitor indicators and evaluate actions will be commissioned where these are not available routinely.

### 7.2.2 Research

The aim of research in the area of overweight and obesity is to fill gaps within our knowledge, including the causation of obesity and effective preventive actions.

As has been the case in other areas, local data on the area of obesity and food consumption is not readily available. Several gaps in epidemiological knowledge on dietary habits of the population have been

identified. In this regard, regular food consumption studies to assess the nutritional status and eating habits of the whole population and sub-groups (age, gender and socio-economic) within this population will be carried out. Moreover, analytical research on the nutrient content of traditional Maltese foods is necessary.

### **7.3 Implementation of the Strategy**

This national strategy aims to halt and reverse the rising trend of excess weight within the Maltese population. This public health challenge results from the complex nature of the causal factors affecting this epidemic as well as the multi-sectoral areas for action identified.

*The Healthy Weight for Life Implementation Group* will be responsible for ensuring that the actions within the different settings are achieved according to the timeframe set and within the allocated budget. The Group will work with all stakeholders to ensure that intersectoral collaboration remains focused on achieving the ambitious targets set in this eight year Strategy.

This National Strategy will be accompanied by a detailed action plan which will identify the responsible entities for different actions as well as timeframes and financial and human resources required.

Monitoring of the targets will take place on a triennial basis (in 2015 and 2018) followed by an end of plan evaluation in order to assess the complex intersectoral and multidisciplinary strands within the *Healthy Weight for Life Strategy*.

## Glossary of Terms

**Anthropometric data:** Information available from the scientific measurement of the human body.

**Benign prostatic hypertrophy:** Also known as BPH. An enlarged prostate not caused by cancer. BPH can cause problems with urination because the prostate squeezes the urethra at the opening of the bladder.

**Diabetes type II:** One of the two major types of diabetes, the type in which the beta cells of the pancreas produce insulin but the body is unable to use it effectively because the cells of the body are resistant to the action of insulin.

**Epidemic:** Affecting or tending to affect an atypically large number of individuals within a population, community or region at the same time.

**Hirsutism:** Abnormal hair growth in women which occurs on the face, chest, abdomen, back, thumbs and toes. Hirsutism is usually related to an increase in androgens, or male hormones, and is common in women with Polycystic Ovarian Syndrome.

**Impaired glucose tolerance:** A transition phase between normal glucose tolerance and diabetes, also referred to as pre-diabetes. In impaired glucose tolerance (IGT), the levels of blood glucose are between normal and diabetic. People with IGT do not have diabetes. Each year, only 1-5% of people whose test results show IGT actually develop diabetes. On retesting, as many as half of the people with IGT have normal oral glucose tolerance test results. Weight loss and exercise may help people with IGT return their glucose levels to normal.

**Incidence:** The rate of new cases of illness commencing during a specified time period in a given population.

**Ischaemic stroke:** The physical blockage of blood flow to an area of the brain, causing brain cells in the area to die. Ischemic strokes cause permanent brain damage and long term impairments.

**Gallstones:** Stones that form when substances in the bile harden. Gallstones can be as small as a grain of sand or as large as a golf ball. There can be just one large stone, hundreds of tiny stones, or any combination.

**Gestational diabetes:** A form of diabetes mellitus that appears during pregnancy (gestation) in a woman who previously did not have diabetes and usually goes away after the baby is born.

**Myocardial infarction:** The death of heart muscle from the sudden blockage of a coronary artery by a blood clot. Coronary arteries are blood vessels that supply the heart muscle with blood and oxygen. Blockage of a coronary artery deprives the heart muscle of blood and oxygen, causing injury to the heart muscle.

**Metabolic syndrome:** A constellation of conditions that place people at high risk for coronary artery disease. These conditions include type 2 diabetes, obesity, high blood pressure, and a poor lipid profile with elevated LDL (“bad”) cholesterol, low HDL (“good”) cholesterol, elevated triglycerides. All of these conditions are associated with high blood insulin levels. The fundamental defect in the metabolic syndrome is insulin resistance in both adipose tissue and muscle. Drugs that decrease insulin resistance also usually lower blood pressure and improve the lipid profile.

**Narcolepsy:** A neurological disorder marked by a sudden recurrent uncontrollable compulsion to sleep. Narcolepsy is often associated with cataplexy (a sudden loss of muscle tone and paralysis of voluntary muscles associated with a strong emotion), sleep paralysis (immobility of the body that occurs in the transition from sleep to wakefulness), what are called hypnagogic hallucinations (pre-sleep dreams) and automatic behaviours (such as doing something “automatically” and not remembering afterwards how one did it).

**Obesity:** A condition that is characterised by excessive accumulation and storage of fat in the body and that in an adult is typically indicated by a body mass index of 30 or greater.

**Peripatetic teachers:** Teachers working in more than one school or college.

**Prevalence:** The proportion of individuals in a population having a disease. Prevalence is a statistical concept referring to the number of cases of a disease that are present in a particular population at a given time.

**Steatohepatitis:** Fatty inflammation of the liver, usually in alcoholics. Steato- refers to fat and -hepatitis to inflammation of the liver.

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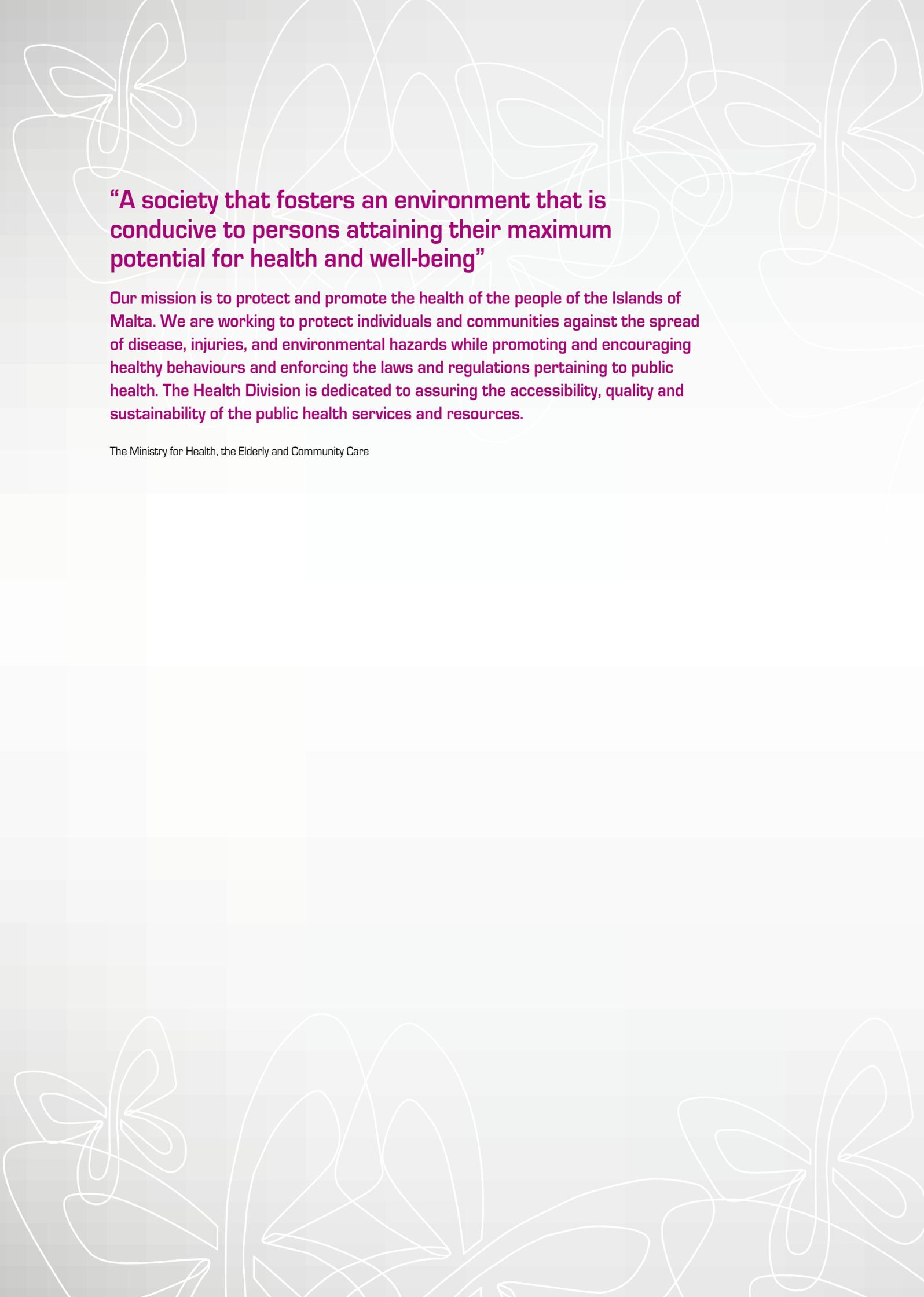
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**“A society that fosters an environment that is conducive to persons attaining their maximum potential for health and well-being”**

**Our mission is to protect and promote the health of the people of the Islands of Malta. We are working to protect individuals and communities against the spread of disease, injuries, and environmental hazards while promoting and encouraging healthy behaviours and enforcing the laws and regulations pertaining to public health. The Health Division is dedicated to assuring the accessibility, quality and sustainability of the public health services and resources.**

The Ministry for Health, the Elderly and Community Care