Annual Report of the Director of Public Health for Cardiff and Vale 2013

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Caerdydd a'r Fro
Cardiff and Vale University Health Board

Contents

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Foreword

In Cardiff and Vale, our life expectancy is continuing to increase but for many those additional years are spent in poor health. Our challenge as a community is how we ensure that the years we live are as active and healthy as possible. No-one chooses poor health although some of us fail to make the connection between our actions and our health both now and in later years.

Today our actions are resulting in 54 per cent of us, as adults, and 31 per cent of our children, being obese or overweight. Overweight and obesity are directly associated with health effects whether that be mental health or physical health. The impacts range from joint and back problems, to diabetes, social isolation, depression, and to premature death. All of these impacts mean an additional call on health services, social services and others, services which are already stretched to bursting.

I have chosen to highlight obesity in our communities because it is absolutely amenable to change. We can actively choose to reverse the rise in obesity and its impact on our health and services. The choices and actions required are many, often difficult and challenging. Reversing the trend means behaviour change, making different choices at an individual level, often not an easy achievement and something which will require support for most people. It will require action at institutional and organisational levels to support behaviour change, actions which make healthy choices the desirable, easy choices for people. It requires a 'movement' to change our love affair with processed foods and sugar containing foods. It requires actions at government policy level to support real food and food standards that promote good health; policies to enable health and activity promoting environments and policies which promote jobs and employment. Every opportunity will have to be taken to support and even require change from individuals, communities, organisations, industry and government.

Our health organisation and our staff, health professionals and others, have a critical role to play in supporting behaviour change. We will have to become active ambassadors for good health supporting prevention and avoiding future harm. Our mission 'Caring for People and Keeping People Well' is exactly right, but we can do so much more by using our opportunities to support behaviour change.

Our partner organisations have all stated their commitment to good health for people in our communities. Tackling overweight and obesity as a preventable cause of poor health needs us all acting to support behaviour change together.

'Those who are constitutionally very fat are more apt to die quickly that those who are thin'
Quote from Hippocrates (circa 460BC – 377BC)

I would like to thank all of those who have contributed to the report. In particular I am very grateful to Dr Suzanne Wood for all her work in bringing this report to publication. I would also like to acknowledge the contribution of Ms Eryl Powell and Mrs Susan Toner.

Dr Sharon Hopkins
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1. Obesity – should we be worried?

Introduction

Obesity has reached epidemic proportions globally and locally. It is on the increase across the developed world. Since 1980, it has doubled worldwide.

This chapter outlines what obesity is and why it's so important to "crack" the issue. It goes on to describe obesity across Cardiff and the Vale and the population groups most affected.

What is obesity and why is it important?

Obesity is a state whereby body fat storage starts to harm physical health and to cause problems with self-esteem, activities of daily living and quality of life.

Obesity is a risk factor for many diseases, leading to poor health. Type 2 diabetes is the disease most influenced by obesity. If you are obese you are seven times more likely to develop type 2 diabetes, than if you are a healthy weight (1). Type 2 diabetes leads to complications such as sight loss and peripheral vascular disease potentially leading to amputations. Obesity increases the risk of heart disease and stroke and causes musculoskeletal problems such as osteoarthritis. It can also be a risk factor for sleep apnoea and some cancers (breast, endometrial and colon). Research suggests that there is an association between obesity and dementia.

The associated cost to the Welsh NHS for obesity and its related problems was estimated to be £73 million for the obese population and £86 million for the overweight and obese population combined, back in 2008/9 (2). This is due to related hospital admissions, outpatients and primary care costs. However, the impact of obesity goes beyond the NHS and there are societal costs to individuals and communities, sickness absence costs to employers, benefits costs and related costs to social care.

The consequences of obesity are summarised in Figure 1.

Figure 1: The consequences of obesity

Source: Adapted from "Combating Obesity on the Entrance Lines" (3)

How is obesity measured?

Obesity is graded by body measurement, commonly using the Body Mass Index (BMI). BMI is measured by taking weight in kilograms and dividing it by height in metres squared. BMI cut-off points are in place in order to be able to monitor obesity levels between individuals and populations. For adults, having a BMI of 30 or over means that you are obese. See Table 1 for further classifications. However, where adults are very muscular, these cut-off points are not a true reflection of obesity levels.

Distribution of fat around the body is also important and fat within the "belly" area is more hazardous to health. In adults, it may also be useful to measure the waist circumference and using this measurement, the following interpretations can be made:

- **Increased risk of health problems** for men with a waist circumference of 94cm or more and for women with a waist circumference of 80cm or more.
- **Greatly increased risk of health problems** for men with a waist circumference of 102cm or more and for women with a waist circumference of 88cm or more.

Children's levels of obesity are measured differently, and use the UK 1990 growth reference charts for boys and girls. These charts need to be used because as children mature their BMI changes, depending on the age and sex of the child. The UK 1990 growth reference charts were developed by taking the BMIs of a large sample of boys and girls at different ages and plotting a distribution curve of their BMI measurements. This not only shows the growth pattern, but where the average BMI measurements lie. The distribution of this reference population is divided into "centile" curves[1]. Centile curves show the position of a child's measurement within a statistical distribution and show how that measurement compares with other individuals within the reference population. For example, if a measurement is on the 75th centile, this means that 75 per cent of children would have a lower value and 25 per cent would have a higher value, as compared to the reference population.

For children, on an individual level, obesity is defined as being on the 98th centile or above. However, for population monitoring, different cut-offs are used and obesity is defined as on the 95th centile or above. These lower cut-offs are used to capture those children with a weight problem and those at risk of developing a weight problem. This helps to ensure that adequate services are planned and delivered for the whole population.

Table 1: Obesity classifications

Obesity classification	Adults individual and population monitoring	Children individual monitoring	Children population monitoring
Underweight	BMI less than 18.5	Less than 2nd centile	Less than 2nd centile
Healthy weight	BMI 18.5 to 24.9	From 2nd centile and up to 91st centile	From 2nd centile and up to 85th centile
Overweight but not obese	BMI 25 to 29.9	From 91st Centile and up to 98th centile	From 85th centile and up to 95th centile
Obese	BMI 30 or more	98th centile or above	95th centile or above

[1] On the UK 1990 growth reference chart this means that the 0.4th, 2nd, 9th, 25th, 50th, 75th, 91st, 98th and 99.6th centile curves are shown.

How obese are we?

Across Cardiff and the Vale of Glamorgan, current levels of overweight and obesity in adults are 54 per cent; and obesity is 20 per cent (4). Across Wales this is 58 per cent and 23 per cent respectively. Therefore, obesity levels are lower in Cardiff and the Vale as compared to Wales. A UK comparison shows that Scotland is the most obese UK nation for both men and women, see Table 2.

Table 2: UK comparisons of adult obesity (BMI≥30)

Country	Male Obesity (%)	Female Obesity (%)
Wales (2012)	23	23
England (2012)	24	25
Scotland (2012)	27	28
Northern Ireland (2011/12)	25	22

Source: Welsh Health Survey; Health Survey for England; Scottish Health Survey and Health Survey Northern Ireland.

International comparisons demonstrate that the UK is relatively obese. For example, as compared to neighbouring countries such as Ireland and France, UK levels are double or even three times higher, see Table 3. However, UK levels are still much below the United States.

Table 3: International Comparisons of Obesity (BMI≥30), aged 15+, 2010

Country	Male Obesity (%)	Female Obesity (%)
United States	44.2	48.3
Greece	30.3	26.4
Malta	28.1	36.5
UK	23.7	26.3
Belgium	14.8	10.7
Ireland	11.7	10.4
Netherlands	11.7	12.9
France	9.0	7.6

Source: WHO Global Infobase

In just eight years, the distribution curve of BMIs in Cardiff and the Vale has also shifted to the right showing that we are getting more obese, and on a scale greater than in Wales, see Figures 2 and 3.

Figure 2: BMI distribution curve for Cardiff and the Vale of Glamorgan over time

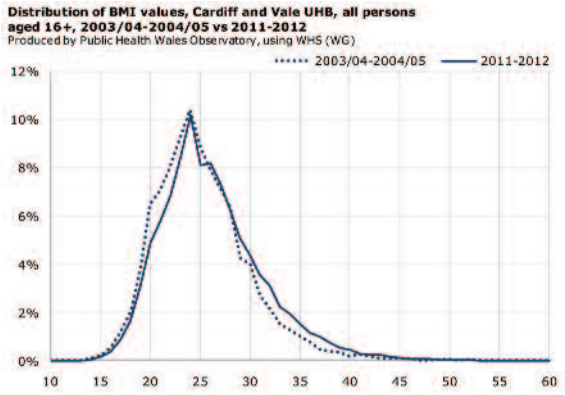


Figure 3: BMI distribution curve for Wales over time

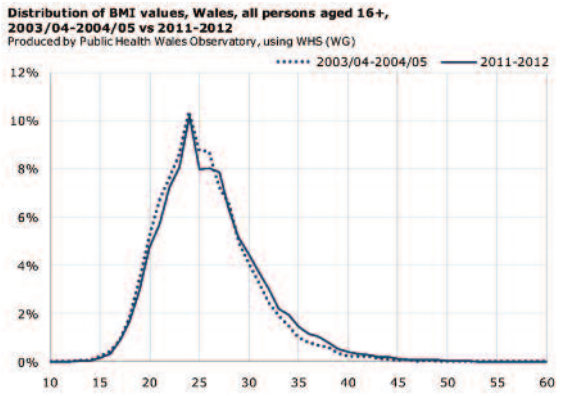
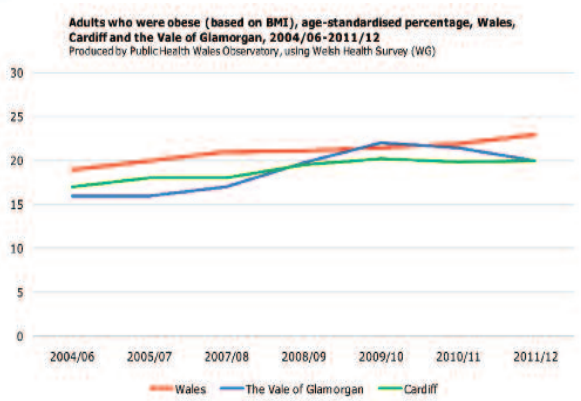


Figure 4 shows that the levels of adult obesity in both Cardiff and the Vale have been consistently lower than Welsh levels over time (except for 2009/10 in the Vale). The trend in obesity is increasing across Wales, but there appears to be some levelling off of obesity levels in both Cardiff and the Vale. This does not leave room for complacency.

Figure 4: Obesity trends across Cardiff, the Vale of Glamorgan and Wales



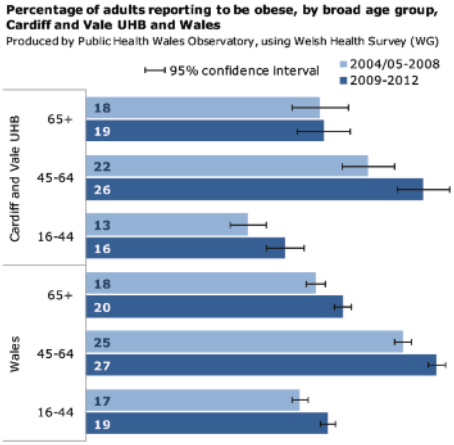
For children, there are high levels of obesity in Cardiff and the Vale of Glamorgan. The first ever obesity surveillance programme for reception year children (aged 4 and 5) took place in the academic year 2011/12 and this showed that in Cardiff and Vale, 11.3 per cent were obese (5). Across Wales childhood obesity was 12.5 per cent (5). This is somewhat higher than the English average of 9.3 per cent obesity in reception year children (6). Due to the widespread nature of obesity in children at such an early age, this translates into more years in chronic ill-health and disease in the future.

The Obesity Stakes

Age

Looking at the adult obesity data, the middle-aged age group has the highest levels of obesity, and is statistically significantly higher than both the younger and older ages in recent years at 26 per cent in Cardiff and the Vale, see Figure 5. This age group has also showed the greatest increase in obesity levels over time.

Figure 5: Percentage of adults reporting to be obese by broad age group



Gender

In Cardiff and Vale, reception year (aged 4 to 5) boys were statistically significantly more obese than girls (12.2 per cent versus 10.4 per cent) in 2011/12 (5). In adults, the picture reverses and the levels in females are higher than that in males in Cardiff and Vale (21 per cent versus 19 per cent), see Figures 6 and 7. In contrast, in Wales currently, the male obesity prevalence (23 per cent) is slightly higher than the female prevalence (22 per cent).

Figure 6: Obesity trend in females

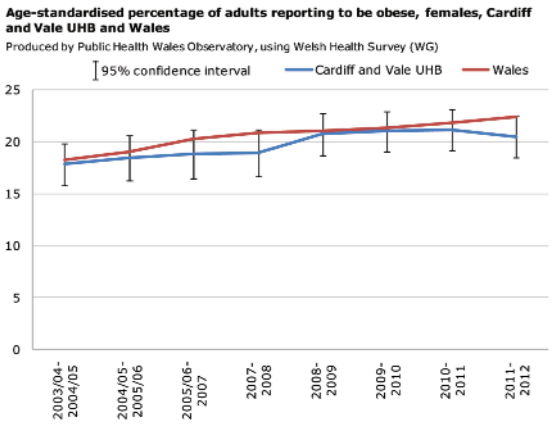
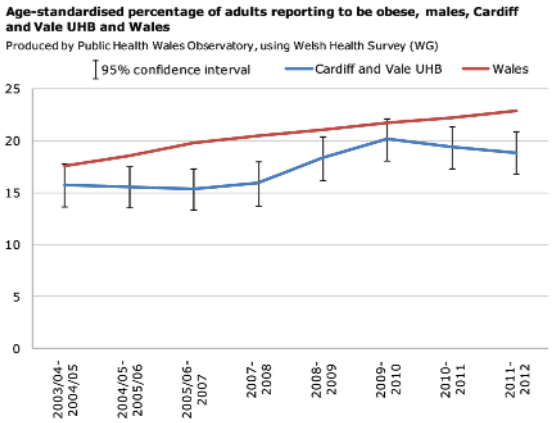


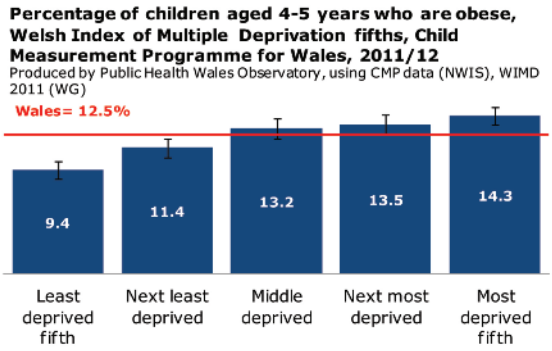
Figure 7: Obesity trend in males



Deprivation

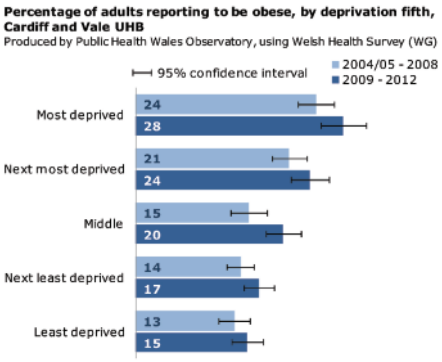
Looking at the results from the Child Measurement Programme for Wales (for ages 4 to 5), there is a clear social gradient nationally for reception year children. This means that the more deprived the population, the higher the levels of obesity. In 2011/12, 9.4 per cent were obese in the least deprived fifth, and this increased to 14.3 per cent in the most deprived fifth nationally. This is significantly higher and unlikely to be a chance finding, see Figure 8. These data are not currently available at the Cardiff and Vale level.

Figure 8: Child obesity levels by deprivation fifth



Looking at the adult obesity levels by deprivation fifth gives a similar picture: the most deprived fifth have double the levels of obesity compared to the least deprived fifth, see Figure 9.

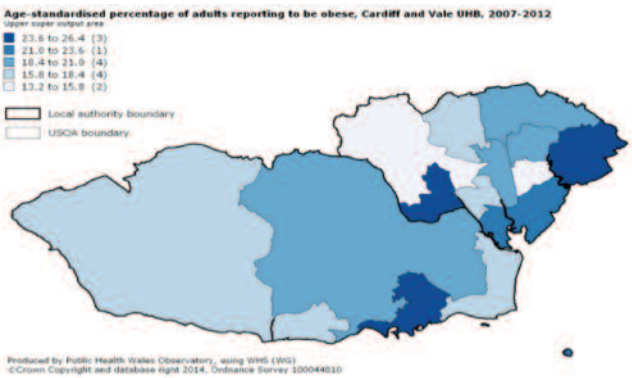
Figure 9: Adult obesity levels by deprivation fifth



Geography

On mapping levels of adult obesity across Cardiff and the Vale, the picture is one that follows the deprivation pattern. There appears to be higher levels of obesity in the more deprived areas, following the Southern arc of Cardiff and the Barry area of the Vale, see Figure 10.

Figure 10: Obesity map of Cardiff and the Vale



Key messages

- Our population is too obese.
- Obesity is a risk factor for chronic diseases which reduce quality of life and life expectancy.
- Our population is getting more obese over time.
- Boys are more obese than girls, but in adulthood this switches.
- Obesity is linked to deprivation.

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2. What makes us put on weight?

Introduction

Many things have contributed to the obesity epidemic over the last thirty years. These include changes in our dietary habits towards eating high sugar, high fat convenience foods and a decrease in physical activity levels into sedentary behaviour. This chapter outlines the factors that make us put on weight in more detail.

Dietary habits and obesity

There are many studies outlining the contribution of dietary habits to obesity. The physiological mechanisms by which we put on weight are still contested. What is for sure is that the old mantra of "calories in, calories out" is an oversimplification of human metabolism (1). Twin studies looking at the differences between obese and lean co-twins describe that the more obese co-twin had an unhealthier diet: consuming more calories, more high fat and sweet food and more alcohol than their lean co-twin (1). Therefore lifestyle makes a contribution towards obesity. Nutritional theory talks about three broad food groups, macronutrients: fat, carbohydrate and protein, see Figure 11.

Figure 11: Macronutrients explained

There are three main macronutrients:

- **Fat** - Is a source of energy, helps to absorb certain nutrients and maintains your core body temperature.
- **Carbohydrate** – Is a source of energy and also aids digestion in the form of fibre.
- **Protein** – Is the building block of cells and body cell functions.

Dietary habits - sugar

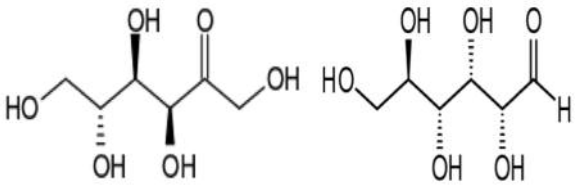
There is currently a revised interest for a sugar theory behind the obesity epidemic. Following on from the Seven Countries Study in the 1980s (2) there was a real focus on dietary fat reduction to reduce heart disease, whilst neglecting the contribution of sugar to the diet. In parallel to this there has been a shift in dietary culture towards energy-dense processed foods (loaded with added sugar and fat) and sugary drinks. The consumption of soft drinks in Great Britain increased dramatically between 1975 and 2011 (3). There are now also "hidden" sugars in a variety of food products such as yogurts, ketchup and ready meals (4).

A recent review indicated that reducing dietary sugars was associated with a statistically significant weight loss, and that the converse was also true (5). However, exchanging sugar for the same number of calories of other carbohydrates showed no significant change in body weight (5). Therefore, this suggests that it is the calories in additional sugar intake that are responsible for the weight gain.

Fructose in particular has been implicated in the obesity epidemic. It is a component of high fructose corn syrup and also sucrose. For the full biochemical structure see Figure 12 below.

Figure 12: The biochemical structure of fructose and glucose

Fructose **Glucose**



Not only does the increased consumption of fructose lead to a higher calorie intake (6; 7), but in some forms, such as sugar-sweetened beverages, it does not give the feeling of fullness, but acts as "hidden calories", in contrast to solid foods (8; 7). Fructose is metabolised differently to glucose and can lead to features that are similar to "metabolic syndrome", see Figure 13, whereas glucose does not (8; 9; 10; 11; 12).

Figure 13: Metabolic syndrome characteristics

Metabolic syndrome is defined by a group of risk factors. It is a combination of the following:

- high blood pressure
- high blood sugar
- high cholesterol levels
- visceral (belly) fat

These risk factors increase the risk of heart disease, stroke and diabetes.

There is also a tendency for the more harmful "belly" fat and liver fat deposition to occur with fructose consumption (13) and the less harmful subcutaneous fat deposition to occur with glucose (14). New fat cell production (de novo lipogenesis) was found to be stimulated more by fructose than by glucose consumption (15). However, these findings are not universally supported by some academics (16), particularly where the literature is sponsored by the food industry (17).

Dietary habits – fats

Based on the evidence, we cannot ignore the role that fat plays in the obesity epidemic. Fat is very calorie dense and the least filling of the three main macronutrients (18). A recent study demonstrated that reducing total fat intake reduced body weight, BMI and waist circumference in a small but statistically significant way (19). There also appears to be an association between fat consumption and getting metabolic syndrome (20). In contrast, studies sponsored by the food industry showed inconclusive results on the relationship between fat consumption and obesity (20).

Physiological evidence demonstrates that combining high dietary sugar and fat may produce even more harmful effects (such as a damaging lipid profile) than the combination of sugar and complex carbohydrate (10). An interesting observation is that in the long term (over one year or more), a low carbohydrate diet achieves greater high density lipoprotein (good) cholesterol increase and a greater triglyceride reduction than a low saturated fat diet (21).

We know that both saturated fat and simple sugars, more so, are addictive in nature and encourage excessive snacking, binge and night time eating, by acting on the reward system in the brain (22; 23). This therefore fuels the obesity epidemic.

Lack of activity

The contribution of a lack of activity to the obesity epidemic has been debated furiously over the years. The relative exchange of "calories in" to "calories out" would appear on the surface to be geared towards dietary intake causing the majority of the problem. For example, walking for one hour at a pace of 5km/hour would burn only 300kcal. This is equivalent to eating five chocolate chip cookies.

However, it matters where the calories come from and how active an individual is. Twin studies show that obese co-twins were only half as active as their lean co-twin on measuring physical activity levels (1). Cohort studies show that for each two hour increase in television viewing time, there was an associated 23 per cent increase in obesity (24). Furthermore, each two hour per day increase in sitting at work was associated with a 5 per cent increase in obesity (24). Intervention studies show that even after only five days of bed rest, metabolic markers such as HDL (good) cholesterol, total triglyceride levels and insulin sensitivity worsened (24). Whilst some individuals may be more genetically prone to obesity, this effect can be diminished through living a healthy lifestyle. For example, the EPIC-Norfolk cohort study of over 20,000 individuals showed that obesity levels could be decreased by 40 per cent by taking regular physical activity (25).

The characteristics of people who have low levels of physical activity are that they are more likely to have low educational attainment, be unemployed, on a low income, or more likely to eat in front of the television (24).

We know that a lack of physical activity has also contributed towards the obesity epidemic.

Key messages

- Energy dense foods loaded with sugar and fat are contributing to the obesity epidemic.
- Low levels of physical activity have driven up obesity levels.

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3. What has gone wrong with our diets?

Introduction

Across Cardiff and Vale there are plentiful supplies of healthy nutritious food, but obesity remains a real issue.

This chapter debates what has gone wrong with our diets over the years. It looks at the psychology as to why some people have poor diets; the influence the food industry has on what we eat; which groups have poorer diets and the influence that education, access and the relative cost of food has on dietary habits.

Background

What we eat and how we eat has changed a lot in recent years. We are eating bigger portions, cooking less at home, eating out more, and often eating whilst doing something else. We are replacing water and milk with high calorie, sweetened drinks, such as soft drinks and fruit drinks, and are eating less wholegrain and fibre (1). There has also been a huge increase in the availability and marketing of processed foods, which are higher in sugar, fat and salt.

The global food industry is shaping our local food environments and eating habits. Processed foods and junk food (nutritionally poor food which is high in fat, sugar and salt) is now common place. Even developing countries are eating a “western” diet, and people have changed from growing and making their own food to buying processed and junk foods. They too are eating more food that is high in energy, sugar, refined grains and fat. These eating habits are linked to illnesses such as diabetes, heart disease and obesity (2; 3; 4).

Psychology of eating

When we eat, signals are sent to our brain to tell us whether we are hungry or full (5). These signals allow the body to regulate our food intake (5). These processes are often automatic and influenced by our previous experiences (6). People often choose to eat food high in calories, sugar and fat because they think food will give them energy (6). The sight and smell of foods can also encourage us to eat too much, as we are eating because we desire it rather than because our body needs it (5; 7).

Experts think that sometimes people overeat because they have an addictive response to foods that they enjoy eating (8). When people compulsively overeat, it may be due to a problem with regulation in the human reward system of the brain: a similar effect to that seen in other forms of substance misuse such as alcoholism or drug addiction (9). An example of this is sugar. Sugar can induce reward mechanisms and cravings in a similar way to addictive drugs (10). Like substance misuse, overeating addictive foods, such as junk food, may lead to an increased tolerance of the effects, meaning that over time you have to eat more and more to get the same effect or meet the craving (8). Different personalities may have a tendency to overeat and have a preference for sweet or fatty foods which is again also seen with other addictive substances (7).

Processed food versus “real” food

Processed food products frequently contain high proportions of fat, sugar and salt. Selling unhealthy food can make an easier profit margin (11), but it does not have to. Some research has shown that selling healthy snacks can be even more profitable or have at least no change in revenue (12).

Food manufacturers concentrate on identifying the “good” and “bad” nutrients in processed food and reformulating it. Reducing one nutrient such as fat and boosting the flavour with another, sugar, is common place.

This leaves the consumer with "edible food-like substances" marketed as "low-fat" (11). The end result is that we're getting fat on "low-fat food". Food scientists also use ingredients that extend shelf-life, make old food look fresher and more appetising than it really is and get us to consume more food.

The marketing of food and drinks for children is "weighted heavily" towards unhealthy products, and this plays a big part in encouraging children to eat unhealthy foods (13). Children are likely to carry on these unhealthy habits as they become adults. Around half a billion pounds is spent on food advertising in Britain each year (14). Food and drinks marketing to children is dominated by foods that are high in fat, sugar and salt. Most products fall within the "Big Five" categories: pre-sugared breakfast cereals, soft drinks, confectionary, savoury snacks and fast food (15). They are aimed to appeal to children, for example through the use of colourful packaging, cartoon brand characters and online "advergames" or competitions. Many of these products are higher in fat, sugar and/or salt than the same type of foods and drinks for adults (16).

Some advertisers also take advantage of children's fears, for example by suggesting that they will be more popular, sporty or happier if they eat the products being advertised. The use of sport stars to promote unhealthy products, such as Wayne Rooney's promotion for Coca-Cola, is a good example of this (17). Food marketing is affecting what foods children prefer, what they buy, and what they eat. Children are influenced by a range of different types of media, including increasingly, internet advertising and social media, where the opportunities for parents to monitor are limited (15). The regulation of food and drink marketing to children is complicated, and a lot of the marketing to children falls outside of the law. Only television is covered by the law, and it only applies to programmes classified as children's programmes.

Millions of young people are being exposed to advertisements during primetime television which are banned from children's programming. A recent study looked at over 750 adverts and found almost one in four television advertisements shown between 8pm and 9pm were for food (22 per cent), with viewers seeing as many as six unhealthy food adverts an hour.

Of the food adverts, the most frequently shown were adverts for unhealthy products from supermarkets such as Aldi and Morrisons (25 per cent), followed by fast-food chains such as KFC (13 per cent), with chocolate and sweet companies like Lindt and Haribo the third most common (12 per cent) (18). Figures show that children's television viewing peaks at around 8pm, but laws created to protect children from targeted adverts do not commence until 9pm. This oversight leaves a big loophole allowing junk food marketing, which could be changed with great effect (19).

In contrast, consuming "real" food, that is food always cooked from scratch, would avoid unhealthy eating habits in both the type and quantity of food products we eat. We saw in chapter one that France has a lower obesity prevalence than the UK. One of the contributing factors may be that a greater proportion of French people cook from raw ingredients on a daily basis and also eat take-aways less often (20). An example of a local cooking success story can be seen in case study 1.

CASE STUDY 1: SAM'S EXPERIENCE OF 'GET COOKING' WITH FLYING START

Sam is 22 and lives in Ely with her daughter Rhianne aged 2 ½. She attended a Flying Start Get Cooking course in the Salvation Army in Ely in January 2013. Sam heard about the group through her Health Visitor.

Get Cooking Nutrition Skills For Life™ is an 8 week cookery course for parents and there is the chance to get an Agored Cymru qualification.

"I decided to come to the Get Cooking course because I was not eating properly myself. I wanted some new ideas and wanted my little girl to eat well.

"Before I came on the course I ate a lot of frozen, ready-made foods and put them in the oven. I feel I ate quite a good balance but it wasn't cooked from fresh. The only thing I cooked home-made was a Bolognese which I learned to cook from my mum when I was young. Now, I cook more from scratch and I think it tastes better. I used to just cook for Rhianne but now I cook for both of us and we eat together. Before, I would give Rhianne her food and I would wait and eat in the night. I think she was fussy before because I wasn't eating with her.

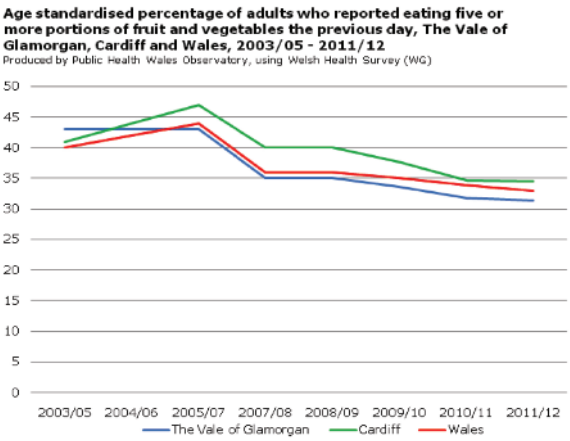
"The course was better than I expected, I really enjoyed it. My favourite part was cooking with the other mums in the group. Since then I think I'm planning ahead more and I'm making time to cook – I've noticed there is less waste, I'm chucking less out. I definitely cook more often now. I used to like cooking before I did the course, I just didn't make time for it. I think the course gave me some motivation – a "boost". I've also given some of the recipes to my friends – the fruity chicken curry, the home-made burgers…which were lovely…. and the lamb hotpot."

Sam finished the course in March 2013 and achieved the level one Get Cooking Agored Cymru Award.

How many people are eating badly?

Just over a third of adults (34 per cent) in Cardiff and Vale report that they eat their five fruit and vegetables a day, and unfortunately this figure has been going down since 2007 (see Figure 14 below). If we say that eating 5-a-day is a guide for eating well, then we can assume that two thirds of our population (66 per cent) have a poor diet. Some research suggests that we should be eating 7-a-day in order to obtain the optimum health benefits (21).

Figure 14: Adults who reported meeting five-a-day guidelines, age-standardised percentage, 2003/05 – 2011/12

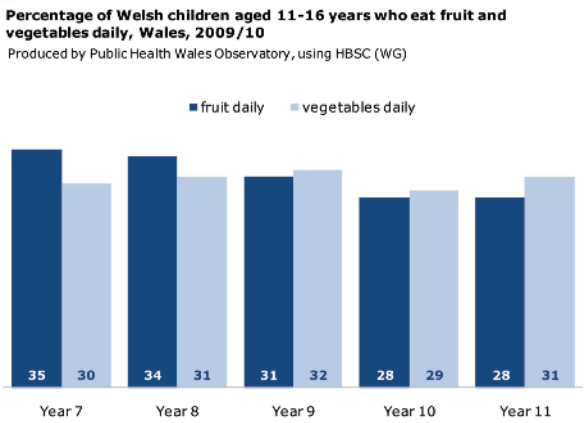


Which groups find it hard to eat well?

Age

The proportion of school age children eating fruit daily declines with age, see Figure 15. Secondary school children in Cardiff and Vale are however more likely to state that they eat fruit daily (39 per cent as compared to the Welsh average of 31 per cent), with levels in Cardiff being particularly high (22). The proportion of children eating vegetables does not vary significantly with school age (22). The proportion of children drinking soft drinks on a regular basis increases with age (22). Children in Cardiff and Vale are much less likely to drink soft drinks daily (22 per cent compared to the Welsh average of 26 per cent) (22). There is no significant difference between ages as to the proportion eating sweets daily (22). Older Welsh children have unhealthier diets.

Figure 15: Percentage of Welsh children eating fruit and vegetables daily by school year group (2009/10)

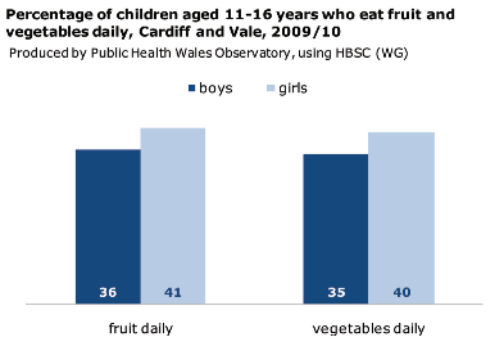


Gender

Boys eat less fruit and vegetables daily than girls in Cardiff and Vale, see Figure 16 (22). Boys are more likely to have an unhealthy diet than girls, drink more daily soft drinks (26 per cent versus 18 per cent for girls) and eat slightly more sweets daily (25 per cent versus 24 percent for girls) across Cardiff and Vale (22).

A lower proportion of Welsh adult males eat 5-a-day, compared to females (32 per cent compared to 34 per cent) (23). If this is a proxy for a good diet then men have a poorer diet than women in Wales.

Figure 16: Percentage of Cardiff and Vale children eating fruit and vegetables daily (2009/10)



Deprivation and educational attainment

We know that there is a link between level of education and poor eating habits. Even when social class is taken out of the equation, level of education can predict quality of diet (24; 25). People on low incomes eat more processed foods, which are much higher in saturated fat, sugar and salt. They also eat a less varied range of foods, due to the need to buy in bulk and being worried about wasting food. Food poverty *'the inability to afford or to have access to food to make up a healthy diet'* (26), is a growing problem in our community. Since 2007, food prices have gone up by 12 per cent, and it is more difficult to afford to eat well. Poorer households spend a larger proportion of their income on food, so choose highly processed and high fat foods of poor nutritional quality in order to save money (27). In the UK, the average spend on food runs at 12 per cent of household income while for those on low incomes it is closer to 30 per cent (28).

People from low–income backgrounds also tend to have poorer cooking facilities and lack skills in cooking and preparing food. People from higher socio-economic groups have more confidence in their ability to cook (29; 30).

Geography

Whether or not a person has access to shops that sell fresh fruit and vegetables can affect whether they eat well. For example, if there aren't shops nearby that sell fresh fruit and vegetables, and a person cannot afford to pay for travel, or is unable to travel to one that does, then they may find it difficult to eat their 5-a-day. We know that areas with high proportions of low income families are likely to have fewer supermarkets, but more convenience stores and fast-food outlets. People who live in areas that sell a wide variety of foods tend to eat more fruit and vegetables than people living in areas where the shops have less variety of food (30; 31; 32; 33; 34). The reasons why this food outlet pattern exists may be due to lower land prices and high levels of local demand in more deprived areas (33).

Key messages

- People are eating more processed food and junk food.
- Junk food and in particular sugar can be addictive.
- The food and advertising industry have helped to drive poor nutrition.
- Boys tend to have a more unhealthy diet than girls.
- Low educational attainment and poverty are factors influencing poor diets.
- Proximity to junk food outlets creates unhealthier diets.

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4. Why are we turning into couch potatoes?

Introduction

With more advanced technology, motorised transport and changes in working practices, we are becoming more sedentary and physically inactive. Levels of physical inactivity are increasing, adding to our chances of becoming obese, developing a chronic condition and adding to the cost burden of health boards and local authorities. Being inactive has been identified as the fourth leading risk factor for global mortality (1) and is estimated to cost between 1.5 to 3.0 per cent of total direct healthcare costs (2).

Avoiding inactivity is as important as being physically active in maintaining our health and well-being. Actions at the individual, organisational and environment level are required to ensure that we sit less, move more and move more often, aiming to be at least as physically active as the recommendations propose.

Background

How much and how often we move around has changed and there is a much reduced demand on us to be active (3). Previous generations were employed in active manual employment, expended substantial energy in home based chores and engaged in active forms of transport (4). Changes in society and types of employment available, motorised transportation and technological advances with the creation and widespread availability of televisions, computers and smart phones have resulted in us becoming more sedentary and less active (4; 5).

Sedentary behaviour

Being sedentary is relatively easy and enjoyable, requiring little planning or effort; for example sitting watching the television or playing a computer game can be ways that we socialise with our families and friends. “Sedentary behaviour is not simply a lack of physical activity. It is a cluster of individual behaviours where sitting or lying is the dominant mode of posture and energy expenditure is very low” (4; 6). The low energy requirements distinguish sedentary behaviours from other activities that also occur while sitting down but which require greater effort (for example, being seated while using a rowing machine) (6; 7).

Examples of sedentary behaviours include:

- Sitting while at work or school
- Watching television
- Using a computer or playing video games
- Reading
- Sitting while socialising with friends
- Sitting in a car or other form of motorised transport.

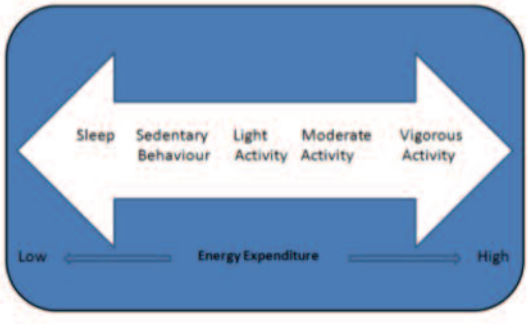
We need to reduce sitting time as sedentary behaviour is a risk factor for obesity and other chronic health conditions. Adults who report longer durations of sitting time and time spent watching television are more likely to be obese (8) and there is a small to moderately significant relationship between television viewing in childhood and being an overweight adult. For all age groups, sedentary behaviour is associated with a poorer diet and greater energy intake as we tend to snack on high calorie foods while sitting, especially while watching television (4).

Prolonged sitting puts us at increased risk of type 2 diabetes, some cancers and metabolic dysfunction (4). Further evidence suggesting that sedentary behaviour is associated with increased risks of cancer (9) and of depression (10) is emerging. Additionally, spending large amounts of time being sedentary has been found to increase our risk of some health conditions, even if we are active at the recommended levels (3).

Recommendations in the UK suggest that people of all ages should avoid prolonged periods of sedentary behaviour and break up periods of sitting (11). In Australia, guidelines recommend that children engage with sedentary behaviours (television viewing or computer use) for no more than two hours per day (12).

To demonstrate the position of sedentary behaviour within the energy expenditure continuum, the British Heart Foundation (7) presented the following model (Figure 17).

Figure 17: Human movement and energy expenditure continuum



Source: adapted by British Heart Foundation National Centre for Physical Activity and Health (2012) Sedentary Behaviour. Evidence Briefing

Physical activity

Being active can be enjoyable, sociable and purposeful (for example through active travel) lifting our mood, helping to maintain or reduce our weight and reducing our risk of ill-health (11). Increased leisure time, access to facilities and useable open spaces, support for active travel and an enhanced understanding of the impact of the environment on how we move around all contribute to increasing our physical activity levels (11; 13; 14).

Physical activity includes everyday activities such as walking, cycling, work-related activity, housework, DIY and gardening. It also includes recreational activities such as working out in a gym, dancing or playing active games, as well as organised and competitive sport (11).

Regular physical activity can reduce our risk of many chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal conditions (11). The benefits of physical activity extend further to improved productivity in the workplace, reduced congestion and pollution through active travel, and healthy development of children and young people.

In 2011, guidelines were issued by the four Chief Medical Officers of England, Scotland, Wales and Northern Ireland recommending physical activity levels for different age groups (11). For children and young people, the recommendation is to be physically active (moderate to vigorous intensity) for at least 60 minutes every day. Adults should aim to be active daily and undertake at least 150 minutes (2½ hours) of moderate intensity activity in bouts of ten minutes or more throughout the week (11).

What affects how much we sit and how much we move?

Various factors affect our behaviour and our levels of physical activity (4; 11). Recent government policies are encouraging us to engage in healthy lifestyle activities and behaviours, including reducing prolonged sitting and increasing our physical activity levels, and to take responsibility for our health (15; 16).

Much sedentary behaviour requires little or no conscious decision making, as it is easy to do and often seen as a natural part of our everyday lives (17). The scenarios in Table 4 help to illustrate how sedentary behaviour is different from physical activity (17).

Table 4: The difference between physical activity and sedentary behaviour

Quality	Physical activity	Sedentary behaviour
Frequency across the day	Low: likely to be no more than once a day, unless you include 'lifestyle' activity	High: regular, prolonged bouts of sedentary behaviour likely for many
Duration	Short, at least for structured exercise (eg 30 mins)	Long, such as 2-3 hours of TV viewing or prolonged sitting at work
Effort	Moderate-to-high	Low
Conscious effort	Moderate-to-high; requires planning	Low and habitual

Significant sedentary behaviour is undertaken during activities such as screen time and motorised transport. Screen time is highly attractive, with televisions and computers offering us an increasing range of functions that increase and reinforce our behaviour (18). Television viewing by parents, the number of screens in our homes, televisions in bedrooms and time spent together as a family viewing television all impact on how much time we spend sitting in our homes (19). The more televisions and computers that are available in the home, the higher the rates of sedentary behaviour (4; 12). Factors that reduce our television watching include family television viewing rules, parental support and encouragement of physical activity, having regular family meals, eating fewer meals in front of the television, not owning a video gaming device and higher access to physical activity equipment (19).

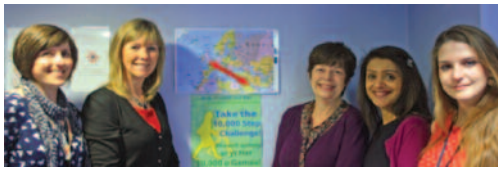
To reduce sedentary behaviour and become more active, we are required to change to activities and behaviour that require effort and energy expenditure. Our behaviour is influenced by our knowledge and attitudes towards being active (20), how motivated we are, our capabilities and the opportunities around us that help (17). This is embedded in our social, material and cultural circumstances (17). The reasons why all ages undertake physical activity are: enjoyment, social interaction and the building of social networks; any health benefits are rarely considered (20). For an example of a fun activity within the workplace, see case study 2.

CASE STUDY 2: A WORKPLACE HEALTH CHALLENGE

In 2011, Cardiff and Vale University Health Board (UHB) and Cardiff Council supported by Cardiff and Vale Public Health Team promoted a twelve week, pedometer based, walk challenge for teams of 5 staff, with a focus on people in sedentary jobs. Each team received a pack with pedometers and a wall chart to record their virtual progress around the Pembrokeshire coastal path before progressing to walk from Lands End to John O'Groats - all without leaving Cardiff. Three hundred and ten UHB staff started the Challenge, at 6 weeks 140 remained. One hundred and ten staff made it to the finish at 12 weeks.

Benefits felt by participants included: improved sleep patterns, more motivation to exercise during the working day, and being more focussed at work after walking.

The winning team of Undergraduate Office administrators walked over 3300 miles (6,617,504 steps) in 12 weeks. The equivalent distance from Cardiff to Bahrain.



Negative experiences of school sports lessons present a significant barrier for individuals through to middle age, especially amongst girls and women, and a lack of appropriate and realistic role models is a considerable barrier across all groups (20). Our belief in our own ability and skills to be active and the views of others on physical activity are also thought to be critical factors in whether we engage in being active (20).

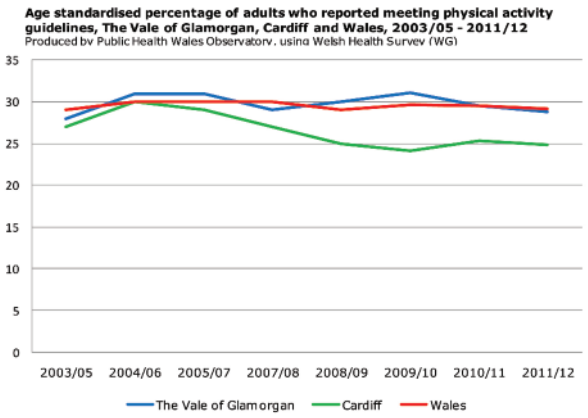
Some barriers to physical activity relate to the physical environment; we are less motivated to be physically active if we perceive our local surroundings to be unsafe or unpleasant (4; 20). Physical characteristics of neighbourhoods that help us to be more active include well kept environments, affordable and efficient public transport, safe and sociable play areas, the presence of green open space, well-lit and pedestrian friendly footpaths and street patterns that provide opportunities for informal contact among residents (13).

Physical activity levels in our schools are low with 102 minutes per week of school lesson time allocated to physical activity (21); the recommendation is that at least 120 minutes per week of school lesson time be allocated to physical activity (22). Less than half of Cardiff schools and less than a fifth of Vale of Glamorgan schools have school travel plans (23) and the length of school lunchtimes, which is vitally important for enabling our children and young people to eat well and participate in physical activity, have reduced. On average, pupils have just 32 minutes lunch break (28 minutes in primary schools, and 33 minutes in secondary) (24) and in Cardiff, 7 schools have 35 minutes or less for their lunchtime (25).

How many people are physically active?

With regards to physical activity levels, across the Cardiff and Vale area, 26 per cent of adults reported meeting the physical activity guidelines of being active at moderate intensity for 150 minutes per week (all Wales figures, 29 per cent) (26). Rates vary with 25 per cent of adults in Cardiff and 29 per cent of adults in the Vale of Glamorgan meeting the guidelines (26). These rates have remained relatively stable at a low level for a number of years (see Figure 18).

Figure 18: Adults who reported meeting physical activity guidelines, age-standardised percentage, 2003/04-2011/12

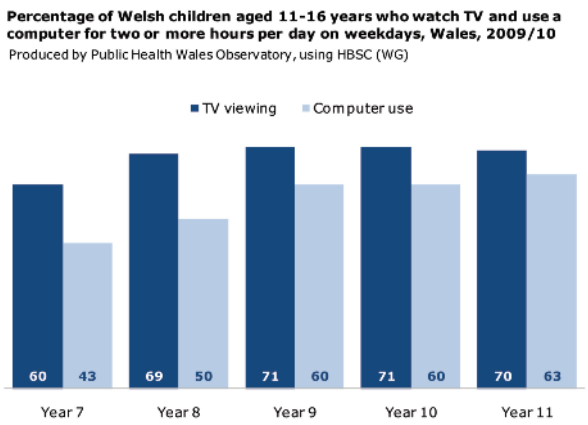


Which groups find it most difficult to be physically active?

Age

The proportion of Welsh children exceeding two hours per day of television viewing or computer use increases with age (27), as Figure 19 demonstrates.

Figure 19: Percentage of Welsh children exceeding 2 hours/ day of TV viewing and computer use by school year group



In general, prolonged sitting increases during childhood and from childhood into adolescence (4; 12). Daily television viewing time and low activity levels increases with age, with a marked increase from approximately 60 years of age onwards (12).

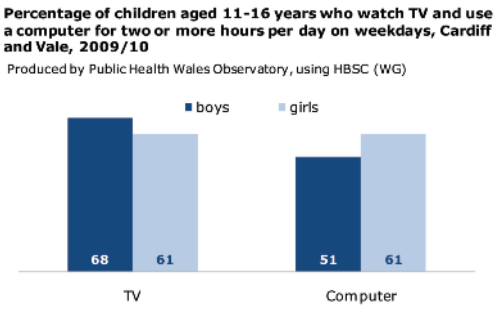
Levels of physical activity fall with increasing age; approximately a third of us aged 45-64 years do not undertake any exercise or physical activity (28) and only 15 per cent of adults aged 65+ meet the guidelines (29).

Gender

Figure 20 illustrates that across the Cardiff and Vale area, a greater proportion of boys than girls reported two hours or more per day of television viewing on weekdays (68 per cent versus 61 per cent) (27). This is a wider gap than the Welsh average of 70 per cent boys and 67 per cent girls.

In contrast, more girls than boys (61 per cent versus 51 per cent) reported two hours or more of computer use (playing games and internet use) on weekdays. This is the same as the Welsh average.

Figure 20: Percentage of boys and girls exceeding two hours a day of television viewing and computer use across Cardiff and Vale



With regards to physical activity levels, across the Cardiff and Vale area, 50 per cent of children aged 4-15 years reported meeting the physical activity guidelines of being active for 60 minutes or more five days or more per week (28); of those aged 11-16 years, boys (53 per cent) were more active than girls (39 per cent) (27).

Two thirds of adults spend more than two hours per day sitting watching television and using the computer with approximately 50 to 60 per cent of our waking hours spent sedentary (4); this equates to 8.25 to 10 hours per day sitting.

In terms of physical activity, men (31 per cent) are more active than women (22 per cent) (28).

Deprivation and educational attainment

Some children (12 per cent in Cardiff) aged 4-15 years undertake no physical activity (28) and boys from the more affluent groups are slightly more likely to do regular exercise than those from the middle and lowest affluent groups (27).

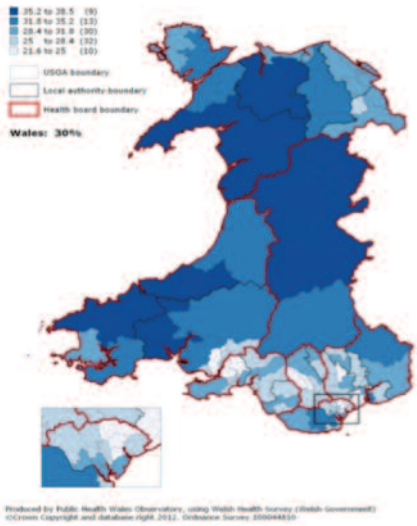
Sedentary behaviour and levels of television viewing are higher among black and minority ethnic groups, in lower socio-economic groups and among those not in paid employment.

Longer sitting times watching television are higher among those with low educational attainment but for home computer use, high use is reported in those more educated (30).

Geography

Activity levels in some parts of Cardiff and the Vale of Glamorgan are higher than in others (31), but the highest rate of 31.8 per cent in an area of Cardiff still represents less than one third of the population undertaking the recommended level of physical activity (Figure 21).

Figure 21: Percentage who meet physical activity guidelines 2003/04 – 2009 USOA, percentage (age-standardised)



Key messages

- Advancing technology, motorised transport and less manual work has led to sedentary behaviour.
- Sedentary behaviour is linked to poorer health outcomes.
- Being sedentary is far easier than undertaking physical activity.
- Sedentary behaviour increases with age.
- Boys and men are more active than girls and women.
- Deprivation is linked to low levels of physical activity.

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5. Obesity - what we can do

Introduction

There are many enablers to achieving a healthy weight. We all have a role to play in reducing obesity. We saw in the first chapter what a significant issue obesity is for Cardiff and the Vale, and that this needs to be tackled through addressing dietary habits and sedentary behaviour. However, it isn't easy for people who are already obese to lose weight, so we need to make losing weight and maintaining a healthy weight the easy option.

Things we can do to reduce obesity

The things that will reduce obesity act at a multitude of levels, so the recommendations for improvement have been divided into relevant sections for different stakeholders, as follows.

What individuals can do

We all have a responsibility to look after our health. Guidelines are available to help reduce obesity levels in individuals. Through following the guidelines we can make steps towards combating the obesity epidemic.

Sugar has little nutritional value and recent draft WHO guidance states that we should not be eating more than 25 grams of sugar a day or 5 per cent of our energy intake (1). This includes "hidden" sugars and sugar that can be found in sugary drinks, processed food and junk food (1). This equates to not eating more than six teaspoons of sugar a day.

Fats are important in the diet for warmth and for the absorption of certain vitamins, but eating too much, in particular of saturated fats can be harmful by raising cholesterol and obesity levels. Guidance from the British Dietetic Association is for men not to eat more than 30 grams a day and for women not to eat more than 20 grams a day (2).

One way of making sure that you know what is in your food and potentially ensuring that you have a healthier diet is to cook from scratch on a daily basis. We saw in chapter three that the French culture of cooking daily using raw ingredients may be a factor in having lower obesity levels in France (3).

As discussed previously, the UK Chief Medical Officers made recommendations for achieving healthy physical activity levels (4). For children and young people they advise that children need to be physically active for at least 60 minutes a day. For adults, they recommend undertaking at least 150 minutes of exercise a week (4).

It is also important to reduce sedentary behaviour and researchers have recommended limiting sitting down to two to three hours a day and moving at least every 30 minutes (5). Interventions to reduce sedentary behaviour in children and young people include: time management of television viewing, rewarding less sedentary time, and exchanging sedentary to active electronic games (6; 7; 8).

Individuals can:

- Eat healthier foods and drinks, with less sugar and saturated fat in them by cooking from scratch.
- Sit less and move more.

What communities can do

To combat obesity, communities need to connect with nature more and eat "real" food. Having an allotment or growing your own food brings both physical and mental well-being benefits. Bringing in healthy foods at community events can promote awareness of healthier options and does not have to be boring or expensive. One example of the way in which this can be done is by getting involved in the Food Cardiff movement, see case study 3.

Within this context it is important to give low income groups access to healthy foods, in order to address the social gradient that currently exists for obesity (9). Examples include setting up a food co-operative or community gardening programme.

Within communities, it is also important to have access to safe recreational and exercise facilities (9). Examples that communities can work on are: setting up a walking or running group and walking or cycling to work.

CASE STUDY 3: FOOD CARDIFF

Food Cardiff aims to encourage everyone in Cardiff (organisations, businesses, and individuals) to grow, produce, buy, use and prepare food in a sustainable way. Sustainability is all about the good stuff: it's about living, working and making decisions in ways that are good for people, our local economy and the natural environment, now and in the future too. Everyone can take action and make positive changes, and Food Cardiff informs, guides and supports these changes. We are working to 5 key principles:

- **Good health and wellbeing -** everyone should have access to affordable healthy food and to information to help them make better food choices. All food providers should provide safe and nutritious food.
- **Environmental sustainability -** food should be produced, processed, distributed and disposed of in ways that reduce food miles and energy use, packaging and waste and that increase composting and recycling.
- **A prosperous local economy -** buying and procuring local and Welsh food supports local food enterprises.
- **Resilient communities -** celebrating the culinary traditions of Cardiff's diverse population brings communities together. All communities should also have access to a wide range of growing and cooking activities.
- **Fairness in the food chain -** everyone in Cardiff should be able to afford or to have access to food to make up a healthy diet. Workers throughout the food chain, both in Wales and abroad, should have good working conditions and be fairly paid for their work and their produce.

Individuals and organisations can pledge to make a positive food change by visiting www.foodcardiff.org.uk or following us on Twitter or Facebook.

Communities can:

- Get behind the Food Cardiff initiative to grow and buy "real" food.
- Be more active together through community activities that are fun to do together.

What public sector organisations can do

Public sector organisations have a responsibility to be leading the way in their responsibility to look after the people they serve and their employees. They need to make healthy and sustainable foods more available and affordable, and make active travel the easy option.

Health sites need to adhere to nutritional standards that are healthy for staff and visitors alike. As a Practising Public Health Organisation, some progress has been made on Cardiff and Vale UHB sites, but we need to implement the Hospital Restaurant Food Standards by 2014. These will ensure healthy choices throughout UHB premises.

Local authorities need to ensure that there are open green spaces available to encourage walking, and cycle routes available to boost cycling. This will more easily permit people to travel actively to work and for leisure purposes. Traffic calming measures also improve the environment and encourage people to walk and cycle, see case study 4.

CASE STUDY 4: 20 MILES PER HOUR SCHEME

From 31 March 2014, Cardiff Council is piloting a 20mph speed limit in Cathays and Plasnewydd; the legal speed limit will be reduced to 20mph on all of the roads within the pilot boundary of the map.

20mph speed limits reduce risk to vulnerable road users and make it easier for people to walk and cycle. Neighbourhoods with lower traffic speeds also benefit from an improved social environment, with easier road crossing and safer conditions for children to play.

For more information, please see http://www.keepingcardiffmoving.co.uk/20mph

Local government can also embed healthy urban planning principles into planning decisions. This could be achieved by having mandatory Health Impact Assessments (10). The follow on from this would be a consideration of green spaces and a review of the proximity of fast food outlets being placed near to where children gather such as schools, colleges and leisure centres (10). Improving active travel and access to good quality open and green spaces contribute to tackling health inequalities as well as increasing physical activity rates (11).

Public sector organisations can:

- In Health, ensure that Hospital Food Standards are met.
- In Local Government, ensure that open green spaces, traffic calming measures and fewer fast food outlets are the norm.

What schools and employers can do

Schools can influence children's obesity levels in many ways. A broader reach can be achieved through influencing school class time, classroom design and homework (7). Successful "whole-of-school" approaches involve prioritising regular, highly active physical education classes, having the environments and resources to support both structured and less structured activity throughout the day and supporting active travel to and from school (12).

A report by the Local Authorities Catering Association found that on average, pupils have just 32 minutes lunch break (28 minutes in primary school and 33 minutes in secondary school) (13). Although children may have access to healthy and nutritious meals at school, they need sufficient time during their lunch break to queue, select, pay for and eat their food. This short amount of time also inevitably impacts on levels of lunchtime physical activity participation. Recommendations from a recent local report include (14):

- A minimum school lunch break of 60 minutes
- School lunch break to begin at 1pm at the latest and an ideal lunch break to begin at 12.30pm
- Re-introduce staggered lunchtimes.

Overall, a "whole-of-school" approach towards obesity needs to be adopted.

Employers have a role to support and look after their staff. A healthier workforce is also more productive. Employers can help their staff to walk, cycle or get public transport to work by creating active travel plans. Interventions that support staff to reduce prolonged sitting and to be more active can be effective, see case study 2 in chapter four.

Schools and employers can:

- Create active travel plans for their learners and employees respectively.
- Develop "whole-of-school" approaches to tackle obesity in schools.
- Develop initiatives in the workplace to reduce sedentary behaviour and increase physical activity.

What Welsh Government can do

As discussed in chapters two and three, sugary drinks are nutritionally poor and calorific. Studies show that introducing taxation on sugary drinks would reduce the amount of sugar sweetened drinks we consume by 15 to 16 per cent; and there would be 180,000 fewer obese adults in the UK (15). Children and young adults drink the most sugar sweetened beverages and therefore would benefit most from the tax (16). Therefore, Welsh Government needs to work with the UK Government to introduce taxation on sugary drinks.

We saw in chapter three that the advertising industry was very powerful at influencing children in particular to eat unhealthy foods. One measure that could work well to curb this influence would be to ban all junk food advertising before the 9pm television watershed, so that children would be less susceptible to junk food marketing (10). A ban on junk food advertisements at all times should be extended to internet "on demand" services too (10). Welsh Government needs to work with the UK Government to ban television junk food advertising before 9pm and at all times for internet "on demand" services.

The new "Delivering Growth: An Action Plan for the Food and Drinks Industry 2014 – 2020", focuses on profit margins for the food and drinks industry in Wales (17). More can be done by working with the Welsh food and drinks industry to ensure that food and drink formulations are healthier, and that there are incentives to produce healthy foods.

Welsh Government can:

- Work with the UK government for taxation on sugary drinks.
- Work with the UK government for a ban on junk food advertising before 9pm.
- Work with the food and drinks industry to ensure that products have healthier formulations and incentivise healthier products.

What the food and drinks industry can do

We saw in chapter three how the food and drink industry can make their products very attractive, particularly for children and young people. Health warnings can be effective in deterring the consumption of unhealthy products. The big food manufacturers and supermarkets should agree to one traffic light food labelling system that they will all use. It should be based on the percentage of calories for men, women, children and young people, and visible calorie counts for food served in restaurants, especially fast food outlets (10).

The food and drinks industry can:

- Agree to a universal food traffic light system.
- Use visible calorie counts in fast food outlets and restaurants.

What the Third sector can do

The Third sector can be very influential in creating social movements in order to bring about positive change. British Heart Foundation is currently running a junk food marketing to children campaign (18), which has a three-pronged approach to:

1. Move the responsibility for developing, monitoring and evaluating advertising regulations to a body independent of the advertising industry.
2. Amend regulations to prevent television advertisements for unhealthy food and drinks before 9pm.
3. Introduce consistent and effective regulations to protect under-16s across all forms of media.

There is also an Action on Sugar campaign (19), which Third sector organisations could get behind, in order to gradually reduce sugar content in foods by 20 to 30 per cent over 3 to 5 years in a similar way to the salt reduction framework.

The Third sector also has a role to play in promoting healthy foods and physical activity at events and during other community actvities.

The Third sector can:

- Lobby the UK Government to take action on junk food advertising for children and on the sugar content in foods and drinks.
- Act as a role model by promoting healthy foods and physical activity within communities.

We all have a role to play in curbing the obesity epidemic.

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Notes