



**Herefordshire
Council**

MAPPING OBESITY TIERS 1 & 2 SERVICES

Version 0.3

HEREFORDSHIRE COUNCIL STRATEGIC INTELLIGENCE TEAM

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SUMMARY – KEY MESSAGES

Children

- In 2014/15 8 per cent per cent of reception year children were obese; 22 per cent were overweight (including obese). Over this period there were no significant difference between the local reception obesity or overweight prevalence and the national and regional figures.
- In 2014/15 18 per cent of year 6 children were obese; 32 per cent were overweight (including obese). Over this period there were no significant difference between the year 6 local obesity or overweight prevalence and the national and regional figures.
- Over the period 2007/08 to 20012/13 when the year group passed from reception to year 6 the proportion of obese children increased by 87.5 per cent, while for the following year group the increase was 98.4 per cent. This was similar to national and regional patterns.
- Among reception and year 6 children no MSOAs have a significantly high rate of obesity in county, national or regional terms.
- Since 2008/09 the prevalence of obesity in reception children has fallen proportionally by 9 per cent, while the figure for year 6 children fell by 11 per cent. The national and regional figures for both year groups showed little change.
- In both reception and year 6 children in Herefordshire the prevalence of obesity was higher in more deprived areas, although since 2011/12 the prevalence of obesity has fallen in deprived areas of the county with moderate increases evident in children from less deprived areas.

Adults

- Since 2012/13 obesity prevalence in adults in Herefordshire (as reported by QoF) has shown annual falls with a figure of 9.3 per cent recorded in 2014/15, although this prevalence is significantly higher than both the national and regional figures.
- The 2011 Herefordshire Health and Wellbeing survey reported that 54 per cent of adults were overweight with 20 per cent being obese. Men are significantly more likely to be overweight than women, but women are more likely to be obese.
- The proportion of adults overweight or obese increases with age. A prevalence of 40 per cent in young adults aged 16-24 rises too almost 60 per cent for older adults aged 45–64 years and individuals over 65 years.
- The proportion of overweight or obese adults does not correlate with deprivation levels, although within the most deprived communities of the county residents are significantly more likely to become morbidly obese.
- In 2014/15 across Herefordshire GP practices the obesity prevalence was 9.3 per cent compared to a national figure of 9.0 per cent. However since 2009/10 prevalence has fallen proportionally by 13.1 per cent compared to 14.3 per cent across England as a whole.
- There is a relationship between obesity and level of activity across Herefordshire with obesity increasing with reduced activity.
- There is a relationship between obesity and the consumption of fruit and vegetables across Herefordshire with obesity increasing with reduced consumption.
- Hospital admissions with a primary diagnosis of obesity have shown a general downward trend in Herefordshire since 2009/10 and are below both the national and regional rates.
- Almost three times as many females than males are admitted with a primary diagnosis of obesity; a similar pattern is observed in England and the West Midlands.

INTRODUCTION

Overweight and obesity are terms that refer to an excess of body fat and they usually relate to increased weight-for-height. The most common method of measuring obesity is the Body Mass Index (BMI) which is calculated by:

$$\text{BMI} = \text{Person's weight (kg)} / \text{Person's height (in metres)}^2$$

Obesity is directly associated with many different illnesses. It is an independent risk factor for cardiovascular diseases and cardiovascular related mortality, and could increase the likelihood of developing other risk factors such as hypertension (high blood pressure) and type II diabetes. Obesity is also associated with cancer, disability, reduced quality of life and can lower life expectancy by up to 20 years. According to the NHS Atlas of Risk¹ obesity is estimated to be the fourth largest risk factor contributing to deaths in England (after hypertension, smoking, and high cholesterol). For individuals classified as obese, the risk of poor health increases sharply with increasing BMI.

In 2015 the direct cost to the NHS of conditions related to being overweight or obese was £6 billion, which equates to 5 per cent of the entire annual budget of the NHS. These costs are expected to rise and by 2030 the estimate is for obesity to cost the NHS between £10 billion and £12 billion². Obesity is a national issue in the UK and in the 2014 *Health Survey for England*, it was stated that around a quarter of adults in were obese (24 per cent of men and 27 per cent of women). Being overweight was more common than being obese and 41 per cent of men and 31 per cent of women were overweight, but not obese. Among children 17 per cent aged 2 – 15 were obese while an additional 14 per cent were overweight^{3, 4}. Obesity levels for both adults and children have shown significant increases since the mid-1990s, and obesity is predicted to affect more than half of adults and a quarter of children by 2050⁵.

The obesity care pathway describes the journey of the advice and support a person would follow at graduating levels of overweight and obesity. It also describes how these conditions are prevented working across the life course with different tiers of weight management services covering different activities (Figure 1). Definitions of the tiers vary locally but usually tier 1 covers universal services (such as health promotion or primary care); tier 2 covers lifestyle interventions; tier 3 covers specialist weight management services; and tier 4 covers bariatric surgery; more detail is provided in Table 1.

¹ The Atlas of Risk. <http://www.nhs.uk/Tools/Documents/risk.swf>

² McKinsey: Obesity costs UK society 73 billion per year. Consultancy UK. Available from: <http://www.consultancy.uk/news/1278/%20mckinsey-obesity-costs-uk-society-73-billion-per-year>

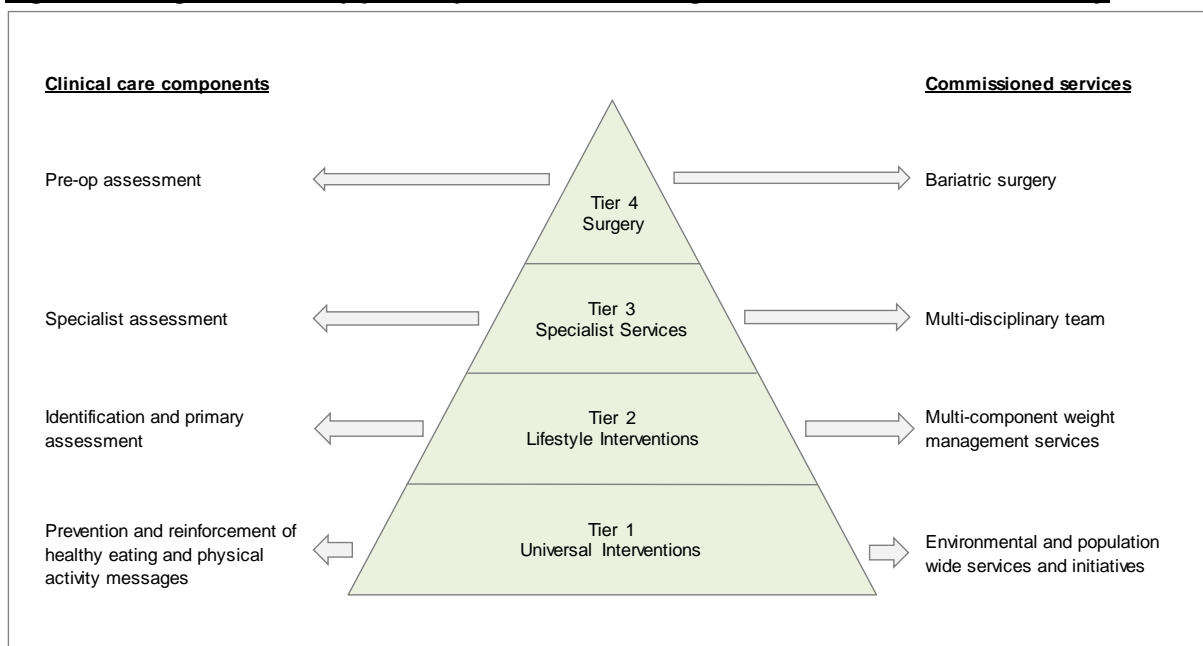
³ Health and Social Care Information Centre (HSCIC). Health Survey for England 2014: Health, social care and lifestyles. Summary of key findings. HSCIC

⁴ Health and Social Care Information Centre (HSCIC). National Child Measurement Programme: England, 2013/14 school year. <http://www.hscic.gov.uk/catalogue/PUB16070/nati-chil-meas-prog-eng-2013-2014-rep.pdf>

⁵ Butland B, Jebb S, Kopelman P, et al. Tackling obesities: future choices – project report (2nd ed). London: Foresight Programme of the Government Office for Science, 2007. www.bis.gov.uk/assets/bispartners/foresight/docs/obesity/17.pdf

In March 2015, a report on “Excess weight prevalence in Herefordshire: an overview” was produced and published by Herefordshire Council Strategic Intelligence Team (SIT). The purpose of this document is to provide an update of this earlier work and explore wider determinants of health associated with obesity in Herefordshire and focuses on obesity services tiers 1 & 2. Within this document Herefordshire data will be compared with information for England as a whole and also with the mean data for comparator group of local authorities. The comparator group is comprised the five local authorities most similar to Herefordshire as identified by the Chartered Institute of Public Finance and Accounting (CIPFA) and is determined with reference to a range of socio-economic factors such as population characteristics, employment profile, housing and mortality. The comparator group consists of (in descending order of similarity) Shropshire, Bath and North East Somerset, Cheshire East, North Somerset and Rutland⁶.

Figure 1: Integrated obesity pathway for adults wishing to receive treatment for obesity⁷.



⁶ For more information relating to data used to determine CIPFA comparators see: http://www.cipfastats.net/default_view.asp?content_ref=18003

⁷ The Royal College of Surgeons of England. Commissioning guide 2014: Weight assessment and management clinics. March 2014. Available from: <https://www.rcseng.ac.uk/healthcare-bodies/docs/weight-assessment-and-management-tier-3-services> (accessed 15 Oct 2015)

Table 1: Obesity care commissioning process in tiers 1 to 4.

Tier	Commissioner	Definition
0	Local Authority (LA)	Universal 'healthy weight' activity – population wide intervention and services covering the determinants of health.
1	LA	Services and work that focus on preventing obesity. Provides basic nutrition and exercise support to reduce weight and improve quality of life.
2	LA	Programmes that aim to use behaviour change theory to enable someone to reduce their energy intake and encourage them to be more physically active (multi-component lifestyle weight management approaches).
3	Herefordshire Clinical Commissioning Group	Specialist assessment and weight management services. Intensive behaviour change service for individuals suffering with complex co-morbidities and/or long term weight issues
4	NHS England commissioned	Specialist Surgical intervention and treatments for obesity. This may be repatriated to CCGs. Low volume and high cost, joint commissioning arrangements with other CCGs might prove more effective.

CHILDHOOD OBESITY

NATIONAL CHILD MEASUREMENT PROGRAMME (NCMP)

The National Child Measurement Programme (NCMP) measures the height and weight of primary school children in reception class (aged 4 to 5 years) and year 6 (aged 10 to 11 years) to determine BMI and assess overweight and obesity levels in children within primary schools. Descriptions of weight categories employed to assess children are given in Table 2. The data collected can be used at a national level to support local public health initiatives and inform the local planning and delivery of services for children. The Children Wellbeing Directorate in Herefordshire Council participates in the national data collection and holds the local data source. This dataset was used in the analysis of childhood obesity outlined in this report.

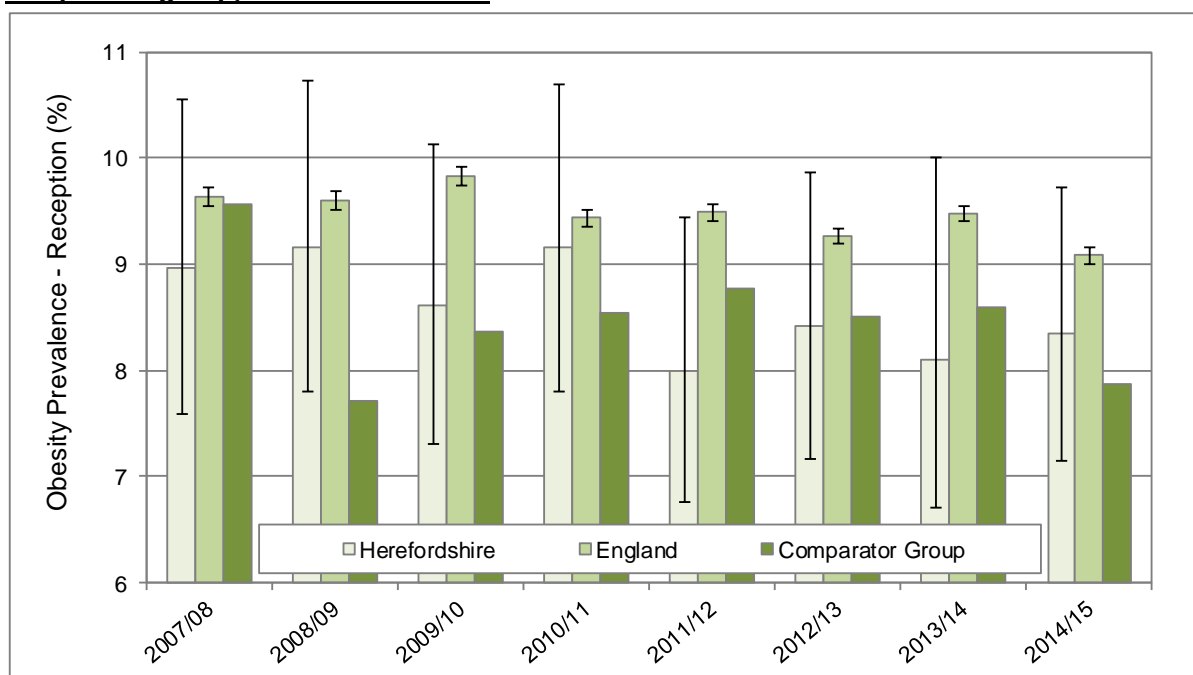
Table 2: UK body mass index (BMI) percentile classifications for children.

Classification	BMI Centile: Population Monitoring (NCMP)	BMI Centile: Clinical Intervention
Underweight	≤2nd centile	≤2nd centile
Healthy weight	>2 - <85th centile	>2 - <91th centile
Overweight	≥ 85th centile	≥ 91th centile
Obese (Very overweight)	≥95th centile	≥98th centile

In 2014/15 3,438 children in reception year and Year 6 in Herefordshire participated in the NCMP and were measured accordingly. This level of participation represented 93.1 per cent of all children within those cohorts in state schools, which is slightly lower than participation for both England (94.8 per cent) and the West Midlands (95.9 per cent). However, as the total number of children that can potentially be measured in the county in the relevant year groups is broadly insufficient to generate statistically meaningful results below county level on an annual basis, the interpretation of NCMP prevalence data needs to be treated with caution when used to identify local areas with high rates of overweight and/or obese children. The small number of children measured in 2013/14 (3,359) also contributes to the fluctuations in Herefordshire prevalence rates seen over recent years, particularly in Year 6 children.

Between 2007/08 and 2014/15 obesity in reception children in Herefordshire has shown some inter-annual variation from a maximum of 9.2 per cent in 2010/11 and a minimum of 8.1 per cent in 2013/14 (Figure 2). Over the same period obesity in reception children throughout England and the West Midlands also showed some variation, although no significant differences with the Herefordshire rate were evident. In 2014/15 the local obesity prevalence in reception children (8.3 per cent) was intermediate between the comparator group (7.9 per cent) and national (9.1 per cent) figures.

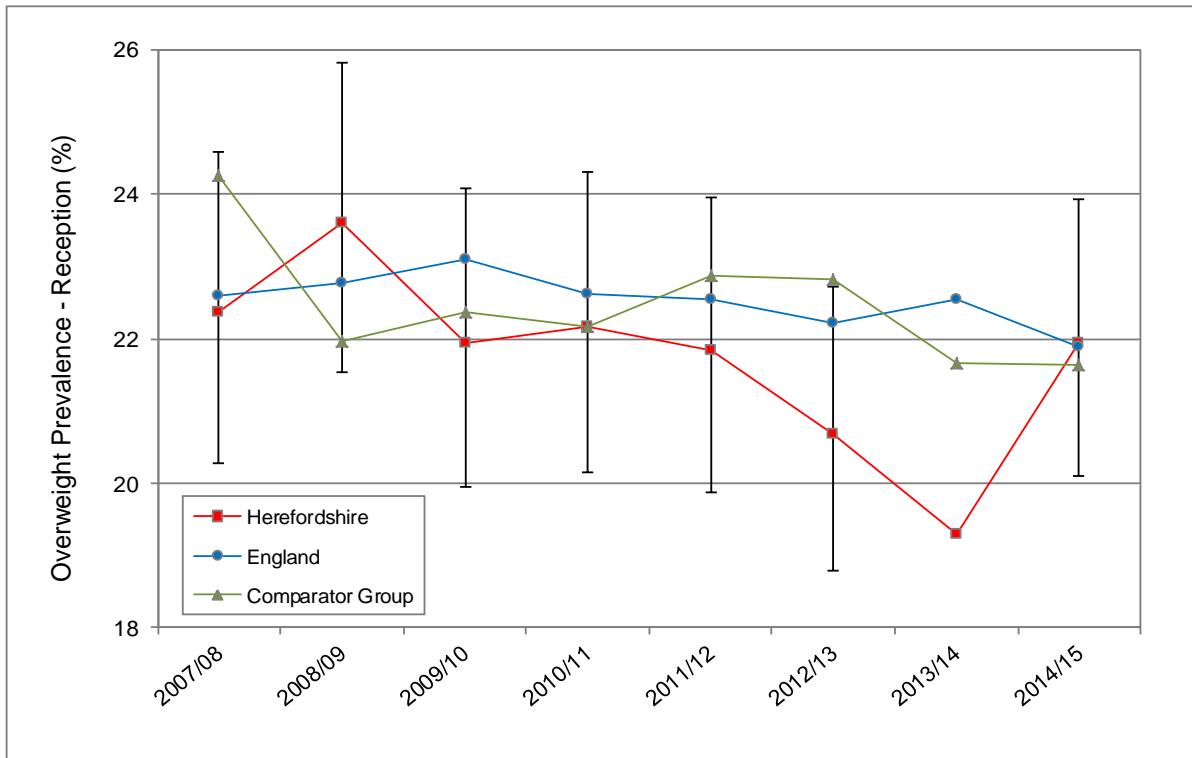
Figure 2: Prevalence of obesity in reception age children in Herefordshire, England and comparator group, 2007/08 to 2014/15.



Source: PHE: NCMP Local Authority Profile

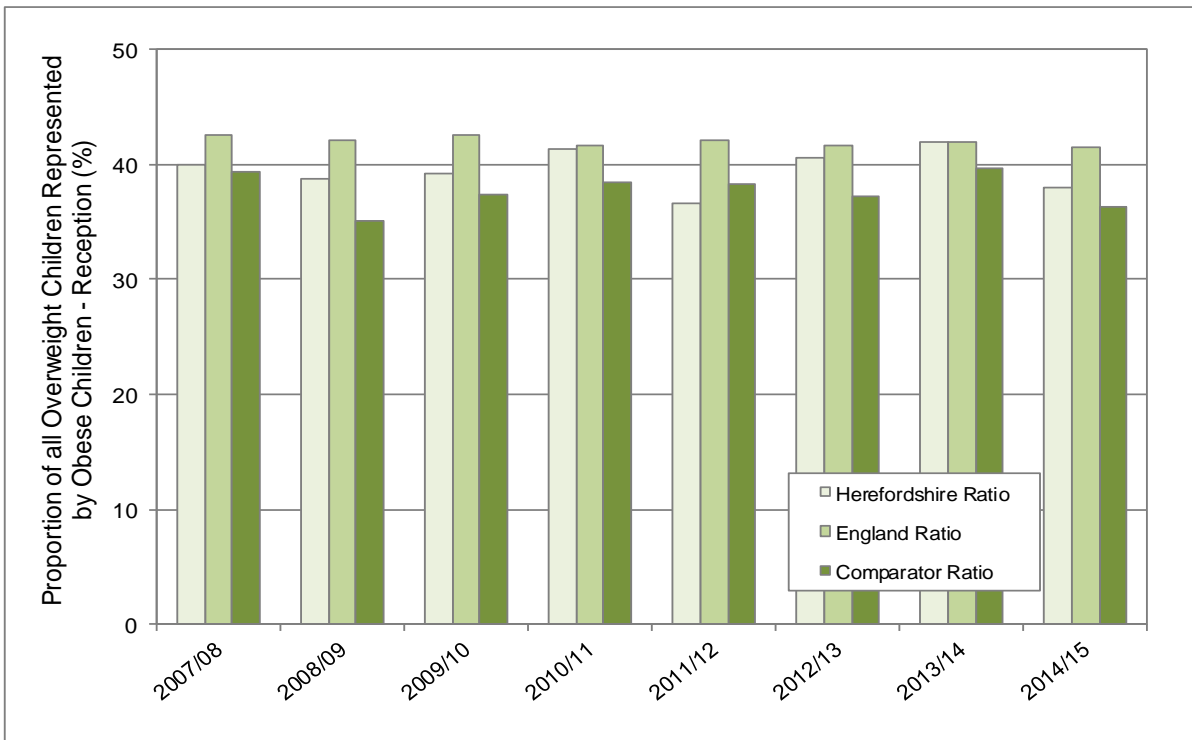
Since 2007/08 the prevalence of overweight reception children (including obese individuals) in Herefordshire has varied between 19.3 per cent in 2013/14 and 23.6 per cent in 2008/09; the 2014/15 figure was 21.9 per cent (Figure 3). Over much of this period the local rate was not significantly different from either the national or comparator group rates which also showed some variability without any distinct temporal patterns evident. The proportion of all overweight reception children represented by obese individuals since 2007/08 in Herefordshire has ranged between 38.0 and 42.0 per cent (Figure 4). This local proportion has been consistently been lower than that for England while higher than the average for the comparator group.

Figure 3: Prevalence of overweight reception children in Herefordshire, England and comparator group, 2007/08 to 2014/15.



Source: PHE: NCMP Local Authority Profile

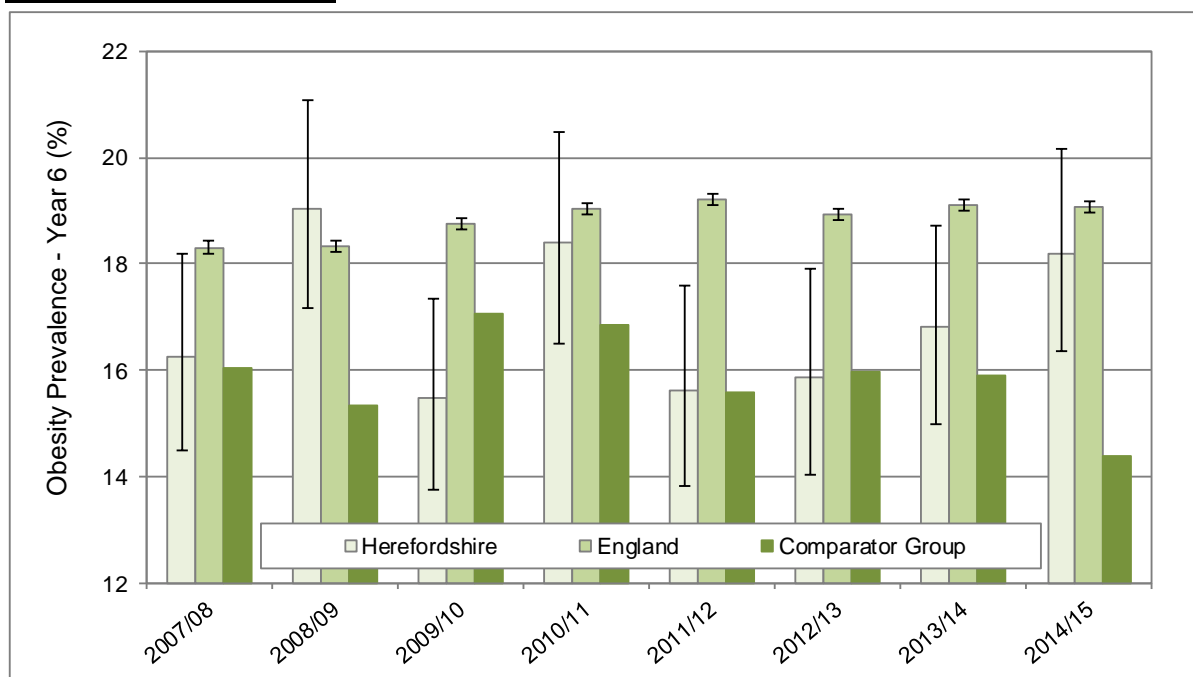
Figure 4: Proportion of overweight reception children represented by obese individuals in Herefordshire, England and comparator group, 2007/08 to 2014/15.



Source: PHE: NCMP Local Authority Profile / Herefordshire Council SIT

For year 6 children the prevalence of obesity between 2007/08 and 2014/15 has also shown some inter-annual variation from a maximum of 21.9 per cent in 2008/09 and a minimum of 15.5 per cent in 2009/10, with no consistent temporal trend evident (Figure 5). The national rate remained relatively consistent during this period, while the average for the comparator group showed some variability with no consistent pattern. With the exception of 2008/09 levels of obesity in Herefordshire year 6 children was lower than the national figure, although the differences were only significant in 2009/10 and between 2011/12 and 2013/14; in 2008/09 the local rate was higher than that recorded nationally, although the difference was not significant. The Herefordshire rate was higher than the average for the comparator group in most years, the exception being between 2011 and 2013 when the levels were broadly similar. In 2014/15 the local obesity prevalence in reception children (18.2 per cent) was intermediate between the comparator group (14.1 per cent) and national (19.1 per cent) figures.

Figure 5: Prevalence of obesity in year 6 children in Herefordshire, England and comparator group, 2007/08 to 2014/15.

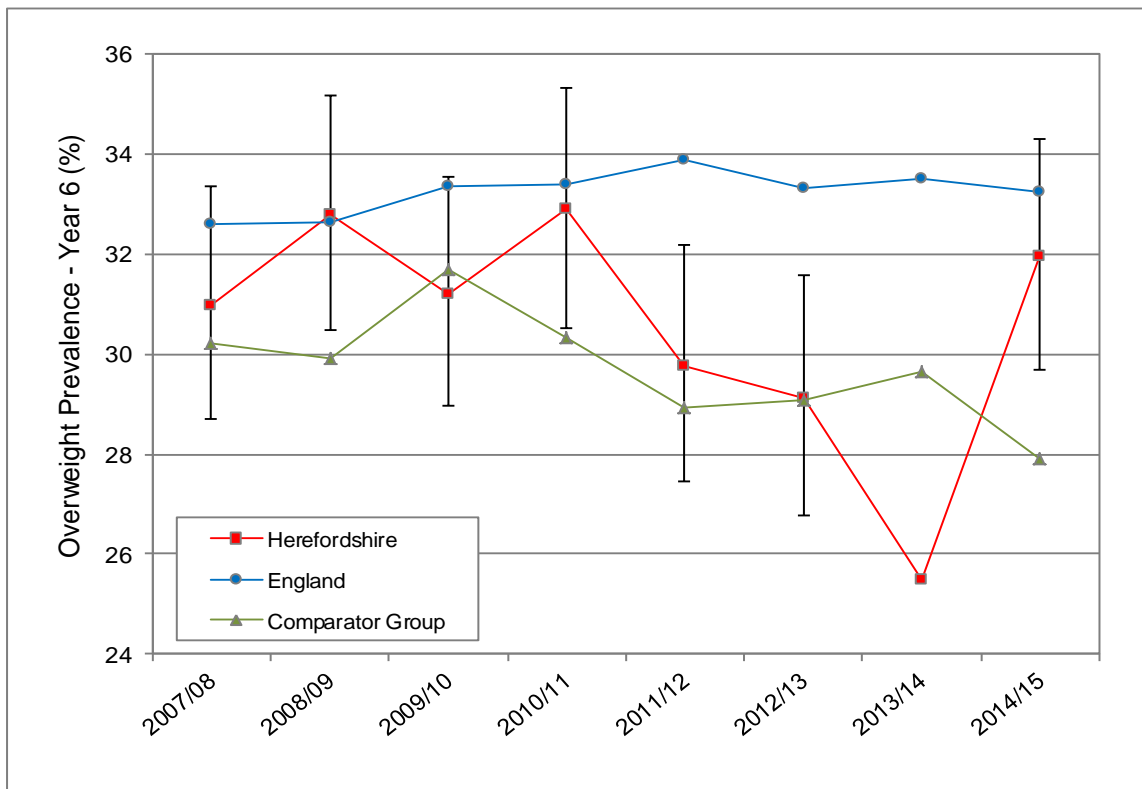


Source: PHE: NCMP Local Authority Profile

Since 2007/08 the prevalence of overweight reception children (including obese individuals) in Herefordshire has varied between 25.5 per cent in 2013/14 and 32.6 per cent in 2008/09 (Figure 6); in 2014/15 the prevalence was 32 per cent (Figure 6). Between 2011/12 and 2013/14 the local rate was significantly lower than the national rate which showed a gradual increase over the period. In 2014/15 obesity in year 6 children in Herefordshire (31.9 per cent) was lower than the England level (33.2 per cent), although not significantly so, while the local rate was higher than the comparator group (27.9 per cent).

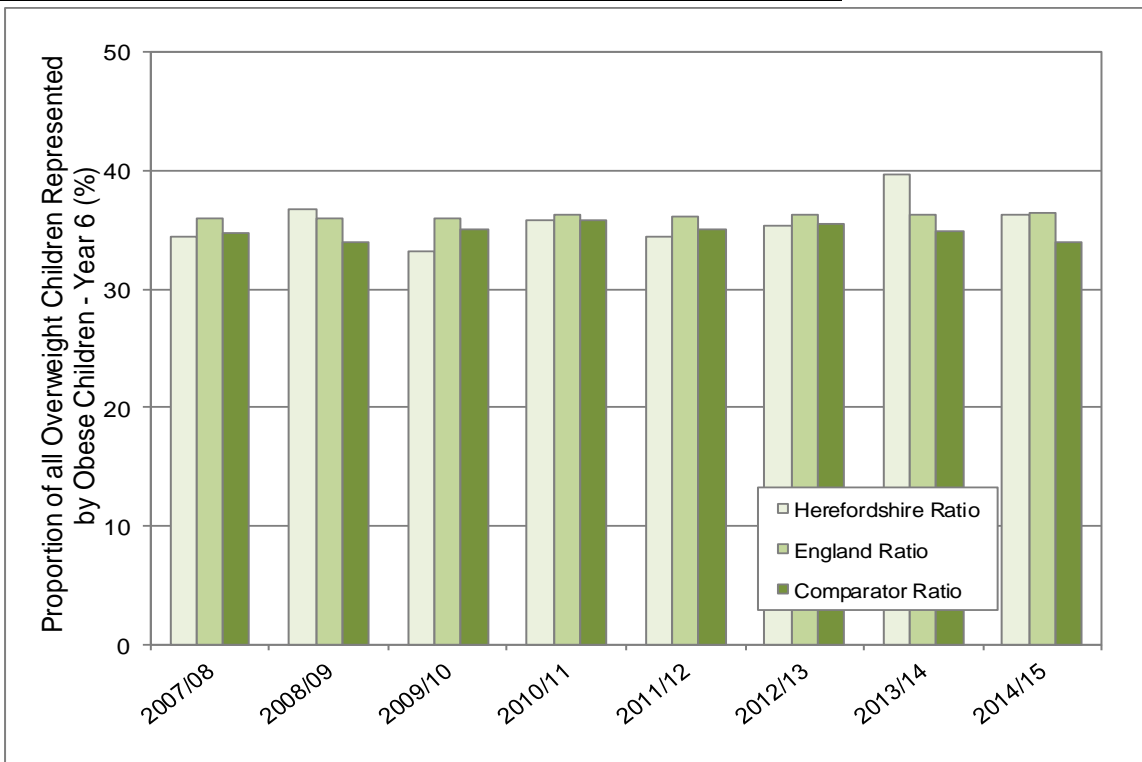
In Herefordshire the proportion of all overweight year 6 children represented by obese individuals since 2007/08 has ranged between 33 and 40 per cent (Figure 7). This range is broadly similar to both those recorded across England (36.0 – 36.5 per cent) and also in the comparator group (33.9 – 35.7 per cent).

Figure 6: Prevalence of overweight year 6 children in Herefordshire, England and comparator group, 2007/08 to 2014/15.



Source: PHE: NCMP Local Authority Profile

Figure 7: Proportion of overweight year 6 children represented by obese individuals in Herefordshire, England and comparator group, 2007/08 to 2014/15.



Source: Herefordshire Council SIT

When looking at the year groups which represent the same group of children in both reception and year 6 it is evident that there is an appreciable increase over the six years between measurements across the country (Table 3). In Herefordshire over the period 2007/08 to 2012/13 when the year group passed from reception to year 6 the proportion of obese children increased by 87.5 per cent, while for the following year group the increase was 98.4 per cent. For both year groups the increases nationally were 98.1 and 98.7 per cent, while in the comparator group the increases were 66.4 and 86.5 per cent.

Table 3: Change in proportion of obese children from reception to year 6 in Herefordshire, England and Comparator Group.

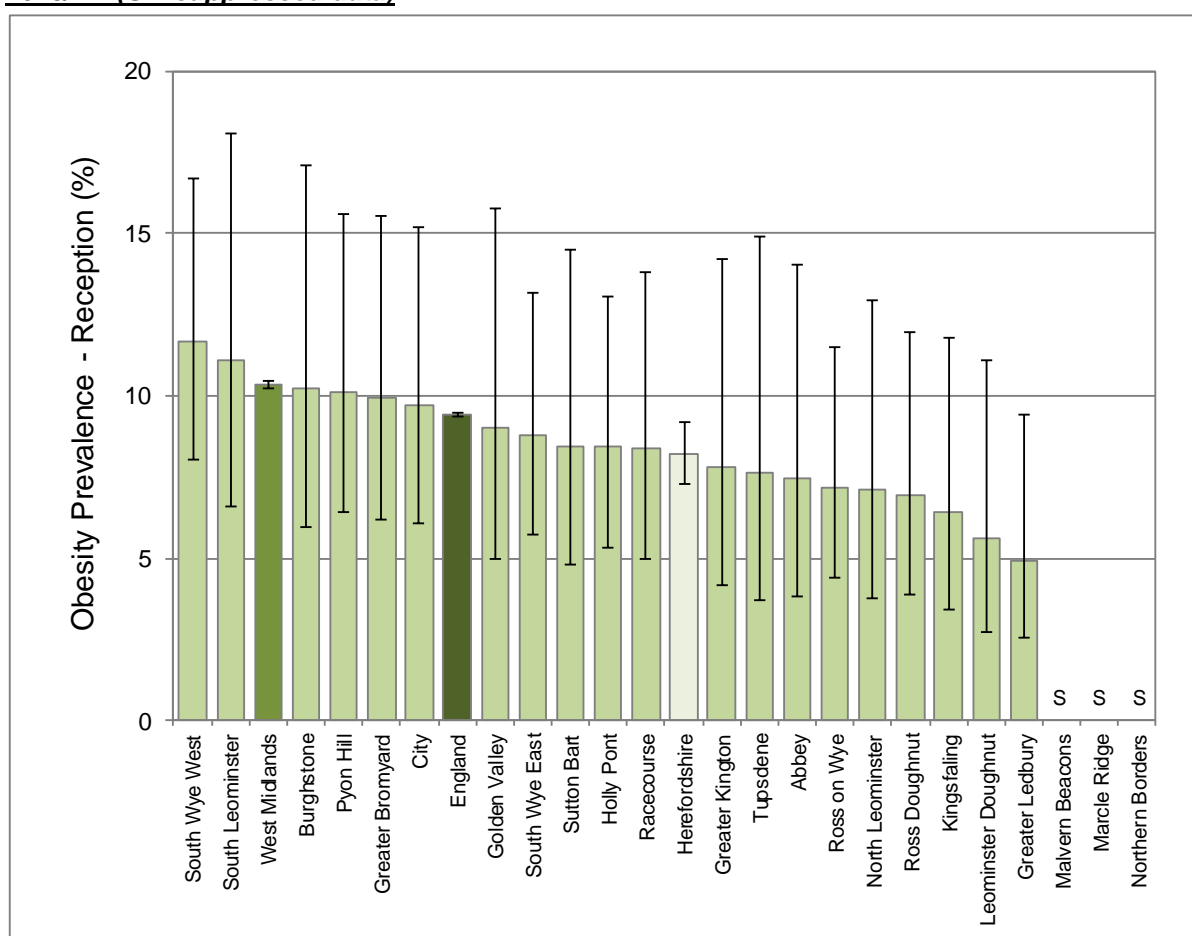
	Proportion of Obese Children (%)				Increase (%)
	Reception		Year 6		
Herefordshire	2007/08	8.95	2012/13	16.80	87.5
	2008/09	9.16	2013/14	18.18	98.4
England	2007/08	9.64	2012/13	19.09	98.2
	2008/09	9.60	2013/14	19.08	98.7
Comparator Group	2007/08	9.56	2012/13	15.91	66.4
	2008/09	7.71	2013/14	14.38	86.5

Source: PHE: NCMP Local Authority Profile / Herefordshire Council SIT

After aggregating the Herefordshire data to Middle Super Output Area (MSOA)⁸ level the obesity rate in reception children for 2011/12 to 2013/14 ranged from 4.9 per cent in Greater Ledbury to 11.7 per cent in South West Wye (Figure 8). Of these reported levels six were higher than the figure for England, while only two were higher than the West Midland rate. These differences are not significant as evidenced by the width of the confidence intervals attached to each MSOA bar,. Wide confidence intervals is related to the small numbers of children being measured at MSOA level within a comparatively sparsely populated county such as Herefordshire This has implications for attempting to identify areas of significantly high prevalence within Herefordshire at which to target resources and campaigns, although the data would indicate that among reception year children no MSOA has a significantly higher or lower obesity rate than national and regional levels.

Data was suppressed for Marcle Ridge Northern Borders and Malvern Beacons MSOAs, either due to the number of children classified as obese or excess weight being less than or equal to five, or to avoid disclosure through differencing.

Figure 8: Prevalence of obesity in reception children in Herefordshire MSOAs, 2011/12 to 2013/14. (S = suppressed data)

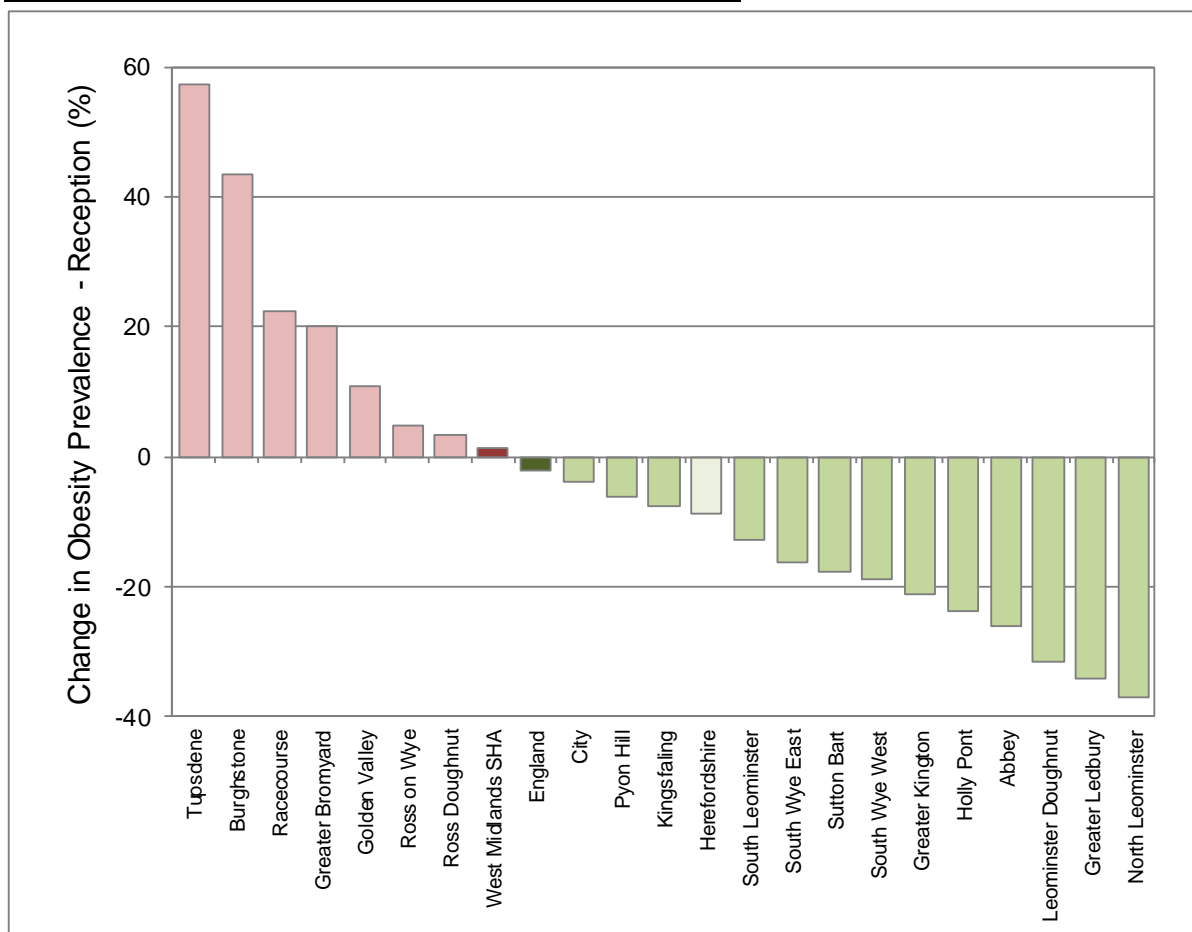


Source: PHE: NCMP

⁸ MSOA - are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales; the minimum population is 5,000 and the mean is 7,200.

Over the period 2008/09 to 2010/11 and 2011/12 to 2013/14 the prevalence of obesity on reception children in Herefordshire MSOAs have shown some change. Obesity prevalence increased in seven MSOAs, with the highest proportional rises recorded in Tupsdene (57 per cent) and Burghstone (44 per cent) (Figure 9). Thirteen MSOAs showed declines in obesity prevalence with the greatest falls observed in North Leominster, Greater Ledbury and the Leominster Doughnut where falls of greater than 30 per cent were recorded. Both the England and West Midlands rates showed little change over the period with the national figure falling by 2 per cent, while the regional figure increased by 1 per cent; the Herefordshire rate fell by 9 per cent over the same period.

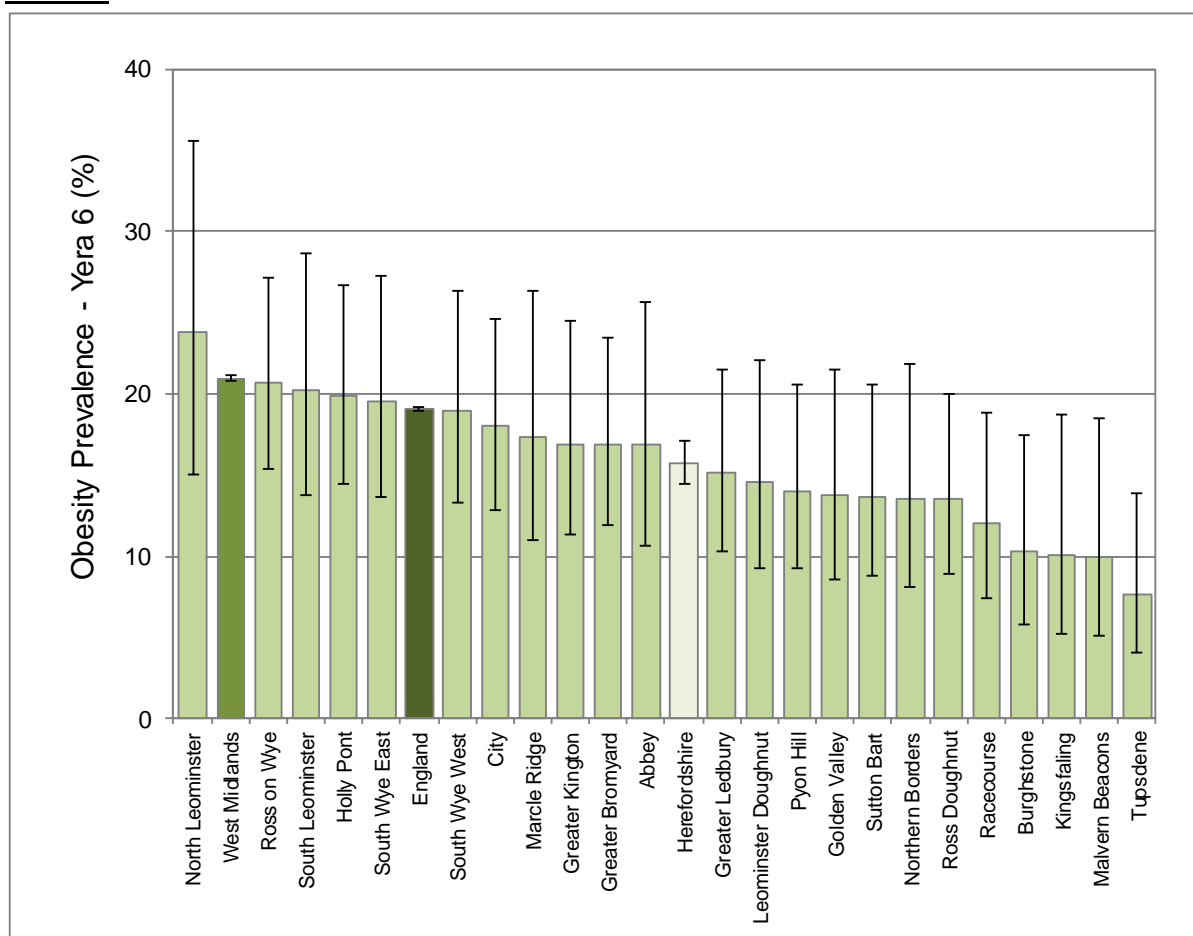
Figure 9: Proportional change in prevalence of obesity in reception children in Herefordshire MSOAs between 2008/9 to 2010/11 and 2011/12 to 2013/14.



Source: Herefordshire Council SIT

The obesity rate in year 6 children for 2011/12 to 2013/14 ranged from 7.6 per cent in Tupsdene to 23.8 per cent in North Leominster (Figure 10). The majority of MSOAs reported obesity levels below the prevalence for England, with five being significantly lower than the national figure. All but one MSOA obesity prevalence were less than the West Midlands figure with six being significantly lower than the regional prevalence. The figure for Hereford overall was significantly lower than both the regional and national rates. Overall, the data would indicate that among year 6 children no MSOA has a obesity prevalence significantly higher than either the national or regional levels, although overall the county figure is lower than across the West Midlands and England as a whole.

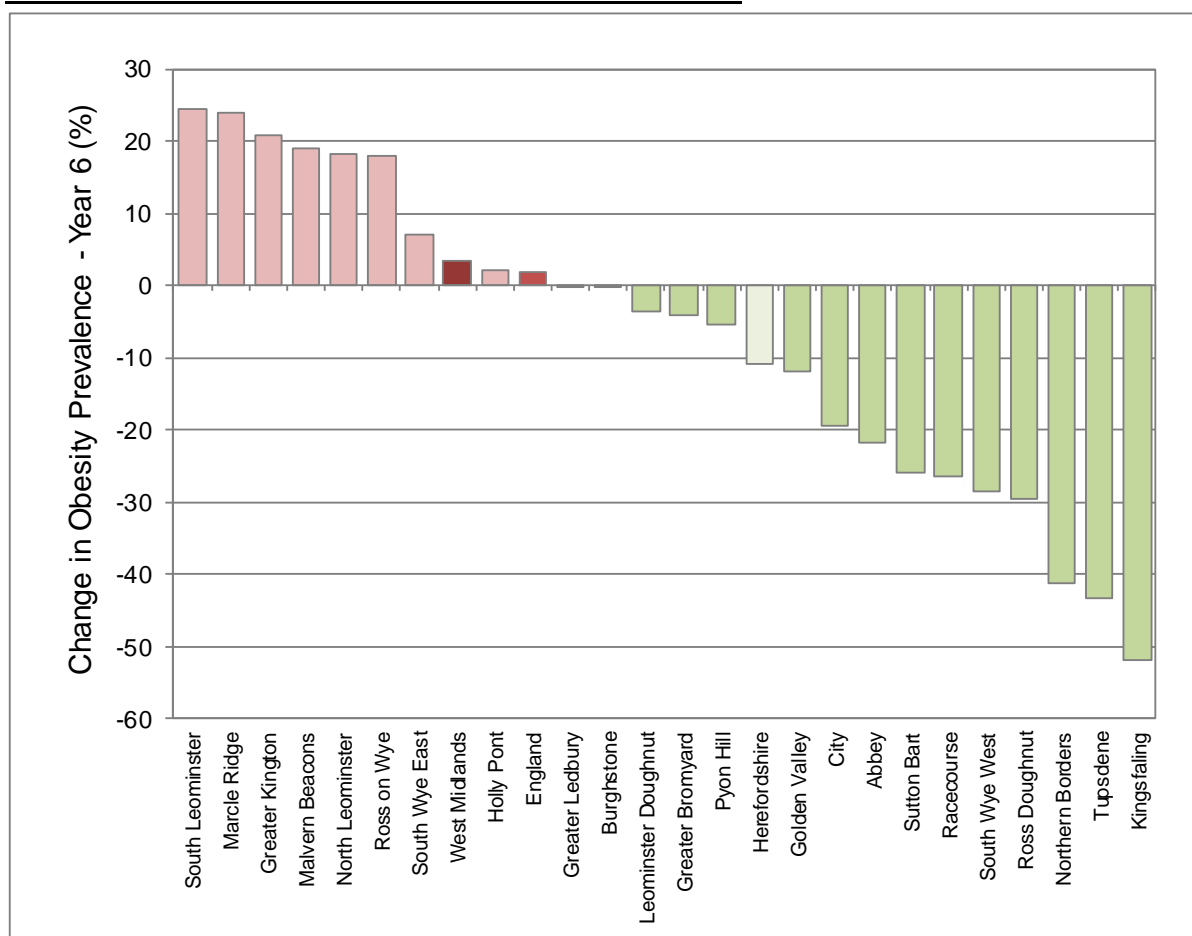
Figure 10: Prevalence of obesity in year 6 children in Herefordshire MSOAs, 2011/12 to 2013/14.



Source: PHE: NCMP

Over the period 2008/09 to 2010/11 and 2011/12 to 2013/14 the prevalence of obesity on year six children in Herefordshire MSOAs have shown some change. Obesity prevalence increased in eight MSOAs, with the highest proportional rises recorded in South Leominster, Marcle Ridge and Greater Kingon where increases of over 20 per cent were recorded (Figure 11). Fifteen MSOAs showed declines in obesity prevalence ranging from marginal falls of less than 15 in Greater Ledbury and Burghstone to over 50 per cent at Kingsfaling. Both the England and West Midlands rates showed small increases of 2 and 3 per cent respectively while the county level fell by 11 per cent over this same period.

Figure 11: Proportional change in prevalence of obesity in year 6 children in Herefordshire MSOAs between 2008/9 to 2010/11 and 2011/12 to 2013/14.

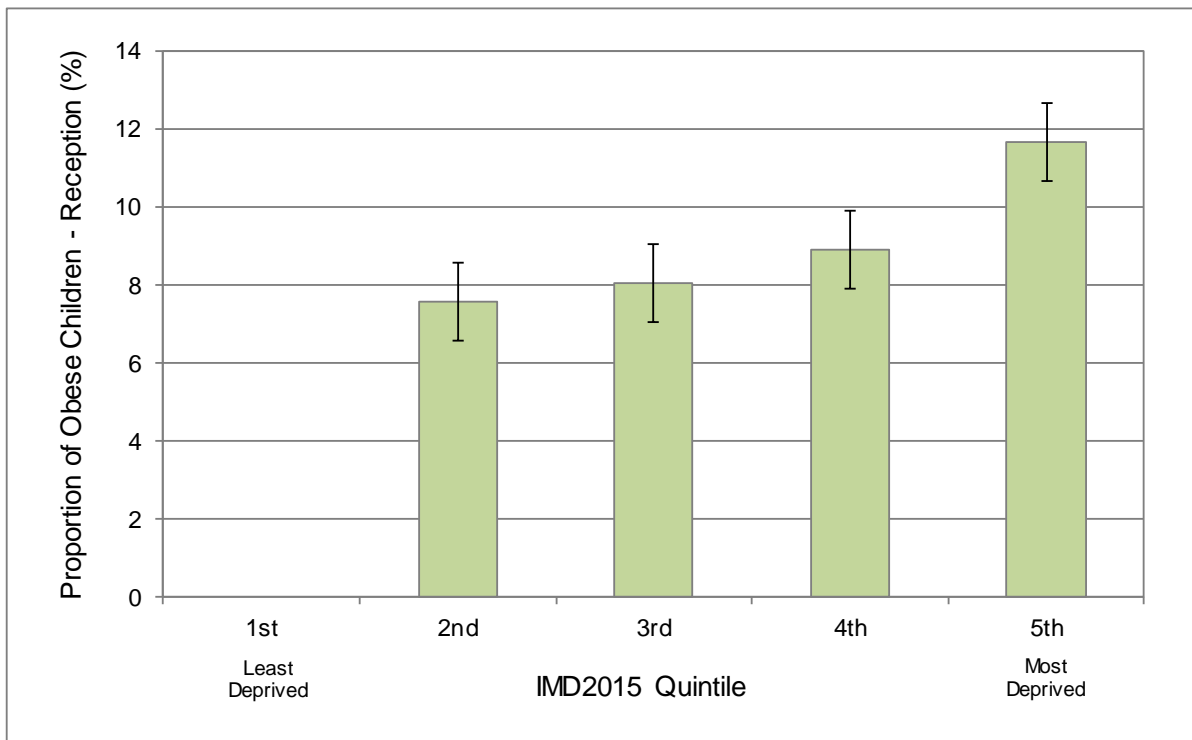


Source: Herefordshire Council SIT

Based on the Indices of Multiple Deprivation (IMD 2015), the extent of deprivation of a population may be gauged by assigning each member of the population to a deprivation quintile via their postcode of residence. The index encompasses seven different socio-economic indicators from which an overall relative measure of deprivation is derived. When comparing the level of deprivation with the prevalence in obesity in reception year children in 2011/12 to 2013/14 a strong relationship was evident. Greater prevalence of obesity was observed with increasing levels of deprivation with 11.7 per cent of the cohort being classed as obese in the most deprived quintile compared to 7.6% in the least deprived quintile from which children were measured (Figure 12). The proportion of obese children in the most deprived quintile was significantly higher than in less deprived areas. When looking at the change in average obesity prevalence in reception children over the period 2008/09 to 2010/11 and 2011/12 to 2013/14 those in the two most deprived quintiles showed appreciable falls of over 18 per cent (Figure 13); in the least deprived areas obesity prevalence increased by 4.6 per cent.

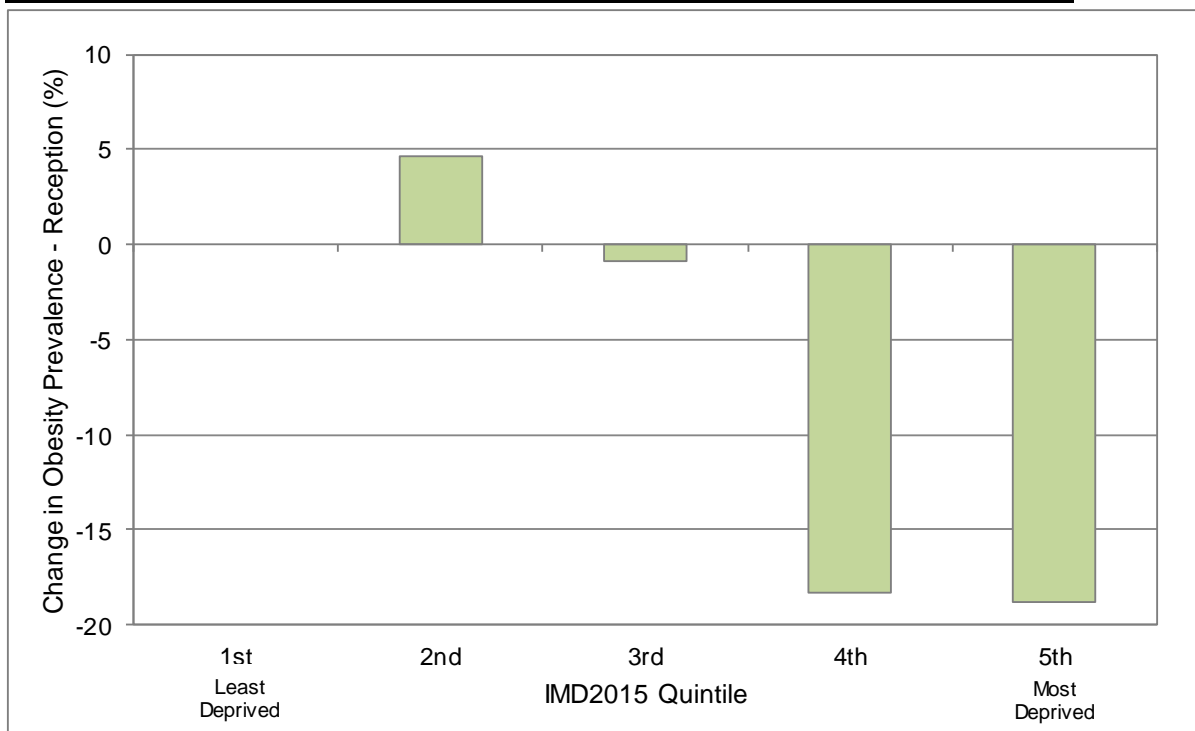
In year 6 children the prevalence of obesity in the most deprived cohort (19 per cent) was also significantly higher than in less deprived areas (Figure 14). However, obesity in year 6 children in the least derived quintile from which measured children came was significantly higher than those in the 3rd and 4th quintiles. When looking at the change in average obesity prevalence in year 6 children over the period 2008/09 to 2010/11 and 2011/12 to 2013/14 those in the second most deprived quintile showed an increase (10.3 per cent), while all others declined with the greatest fall in the most deprived quintile (28.4 per cent) – Figure 15.

Figure 12: Average prevalence of obesity in reception children in each Index of Multiple Deprivation (IMD2015) quintile in Herefordshire, 2011/12 to 2013/14.



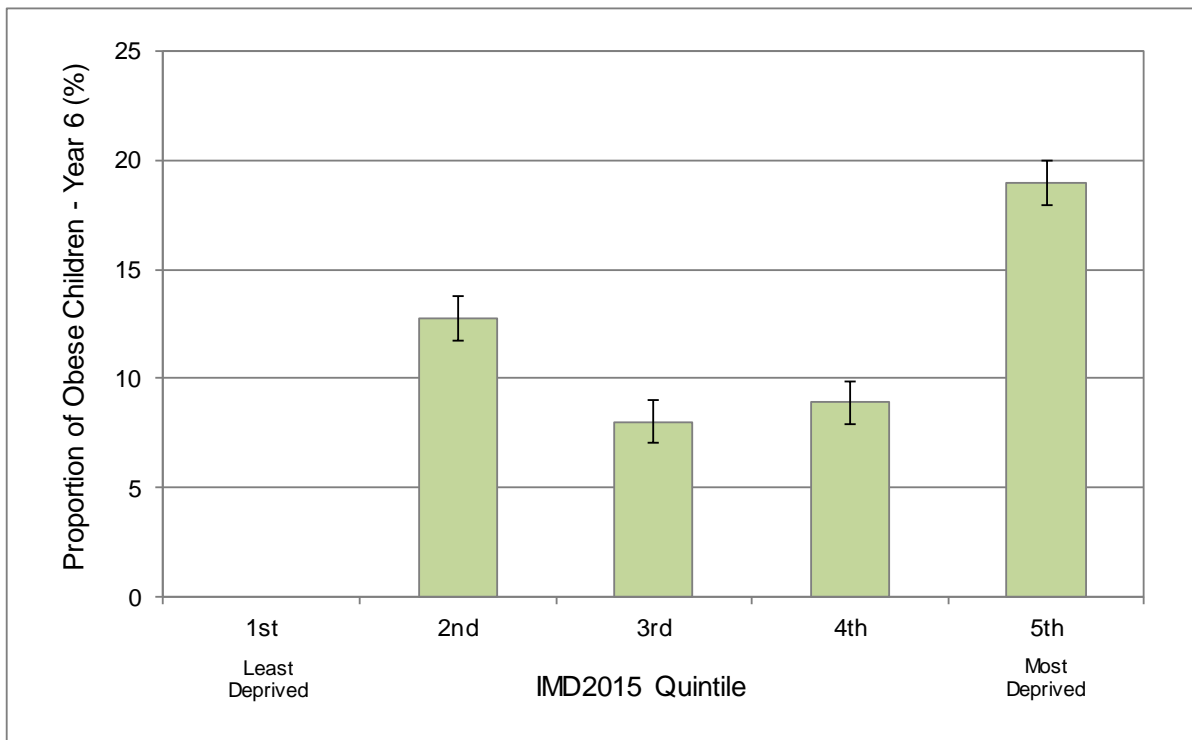
Source: Herefordshire Council SIT

Figure 13: Proportional change in average prevalence of obesity in reception children in each Index of Multiple Deprivation (IMD2015) quintile in Herefordshire, 2011/12 to 2013/14.



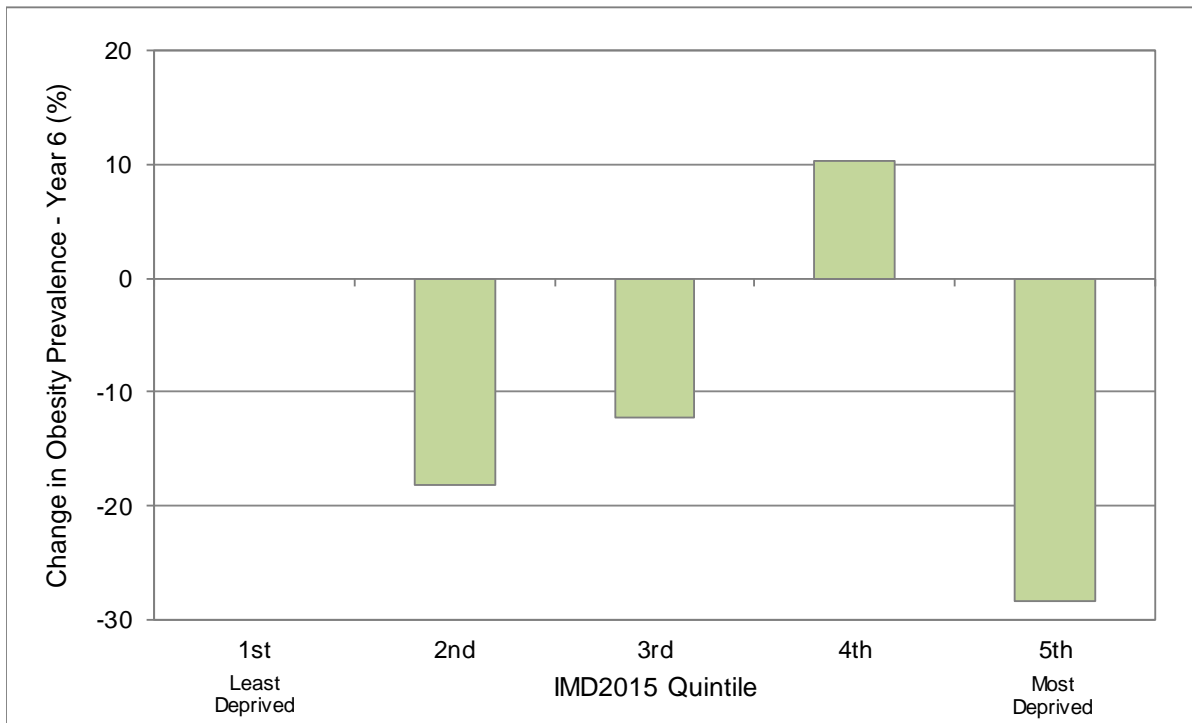
Source: Herefordshire Council SIT

Figure 14: Average prevalence of obesity in year 6 children in each Index of Multiple Deprivation (IMD2015) quintile in Herefordshire, 2011/12 to 2013/14.



Source: Herefordshire Council SIT

Figure 15: Proportional change in average prevalence of obesity in reception children in each Index of Multiple Deprivation (IMD2015) quintile in Herefordshire, 2011/12 to 2013/14.



Source: Herefordshire Council SIT

ADULT OBESITY

As outlined above Body Mass Index (BMI) is commonly used to classify underweight, overweight and obesity in adults. Weight categories according to BMI are given in Table 4⁹.

Table 3: Classification of adult weight according to BMI.

BMI Classification	BMI Range
Underweight	<18.5
Healthy Weight	18.5 – 24.99
Overweight (pre-obese)	≥25 (25.00 – 29.99)
Obese	>30
Morbidly Obese	>40

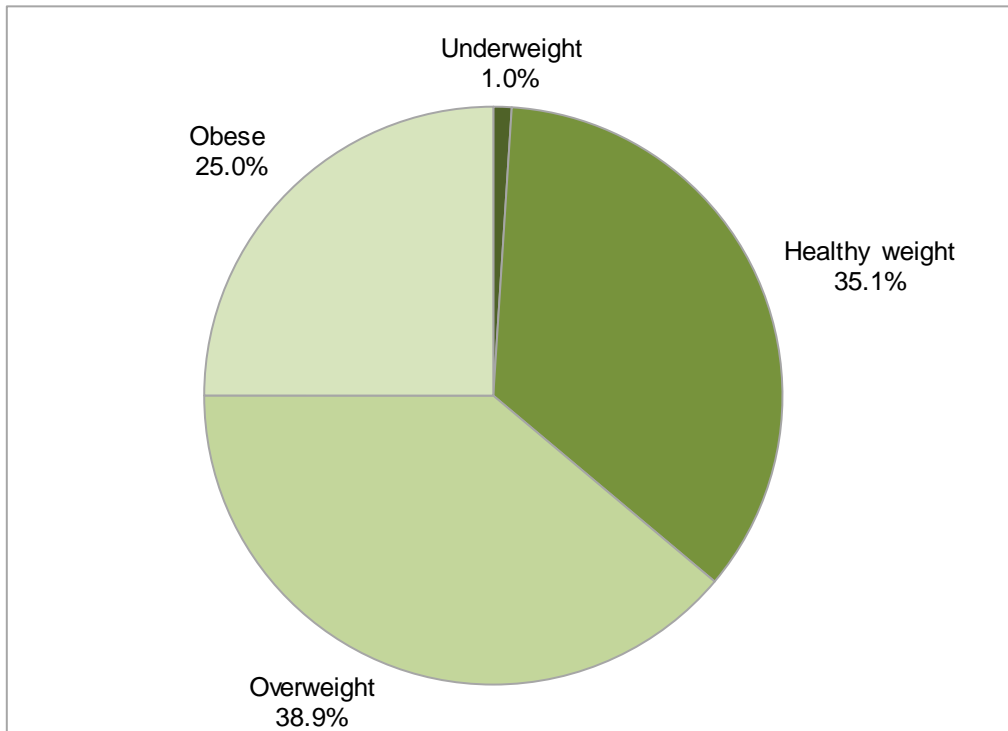
As part of the Active People Survey (APS) commissioned by Sport England collects information on weight and height information among adults (age 16 and over) from which BMI measures are derived at local authority level. Combined data for the years 2013 – 2015 indicate that in Herefordshire 25 per cent of adults were obese, 39 per cent were overweight (not including obese individuals), 35 per cent were of healthy weight and 1 per cent were underweight (Figure 16).

The proportion of overweight (including obese) adults in Herefordshire was 64 per cent which, while lower than the regional and national figures, was not significantly so (Figure 17). Similarly, the Herefordshire prevalence was broadly similar to those recorded for comparator authorities.

The adult obesity prevalence in Herefordshire was higher than the national prevalence and lower than that for the West Midlands, although not significantly so (Figure 18). The local prevalence was higher than those reported in the comparator group, although the local figure was only significantly higher than those reported for Rutland and Bath and North East Somerset.

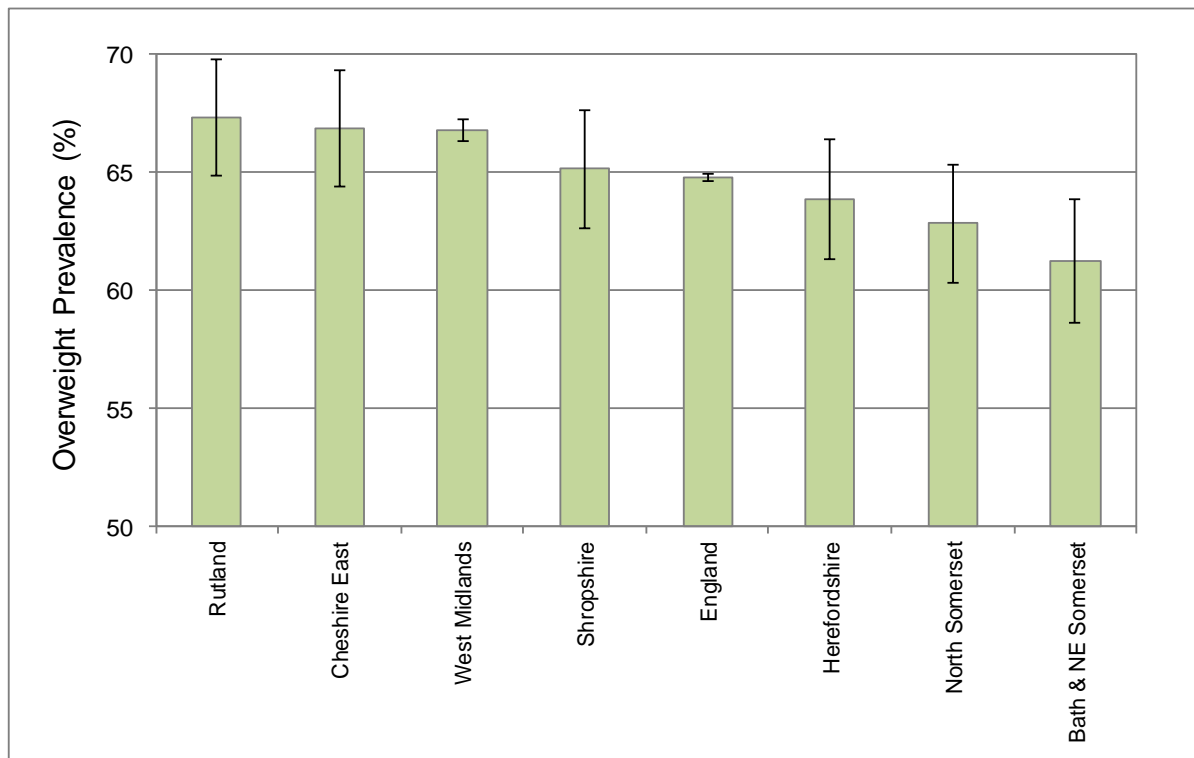
⁹ World Health Organisation (WHO). BMI Classification - Global Database on Body Mass Index. Available from: http://apps.who.int/bmi/index.jsp?introPage=intro_3.html

Figure 16: Body Mass Index category of adults in Herefordshire, 2013 - 15.



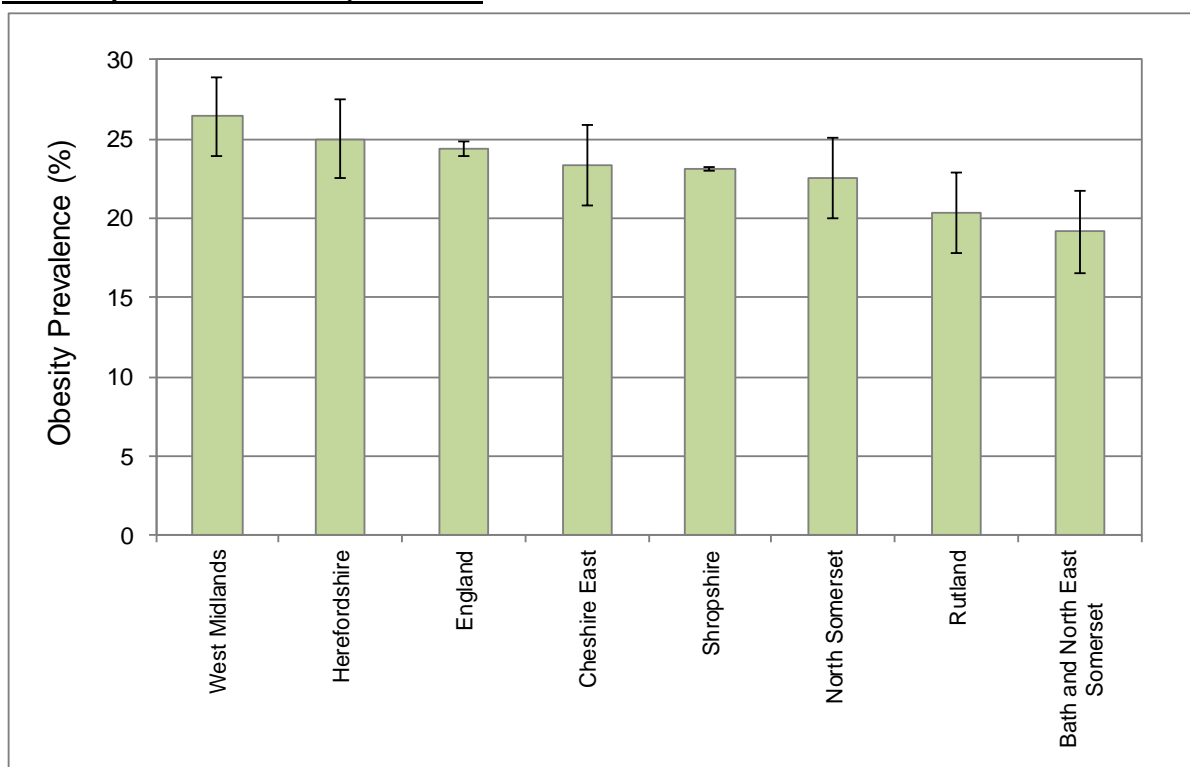
Source: Active People Survey, Sport England

Figure 17: Prevalence of excess weight in adults (aged 16+) in Herefordshire, England, West Midlands and comparator authorities, 2013 - 15.



Source: Active People Survey, Sport England

Figure 18: Prevalence of obesity in adults (aged 16+) in Herefordshire, England, West Midlands and comparator authorities, 2013 - 15.

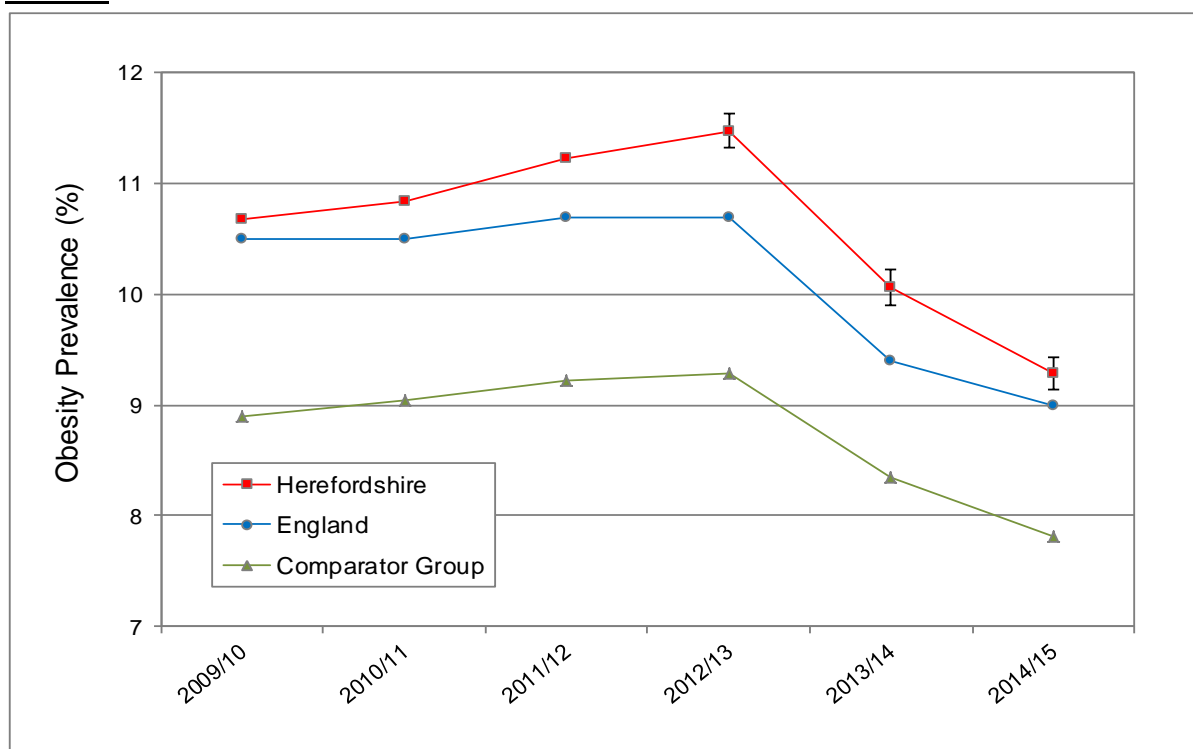


Source: Active People Survey, Sport England

QUALITY AND OUTCOMES FRAMEWORK (QOF)

Adult obesity as measured by the Quality and Outcomes Framework (QoF) gives the percentage of patients aged 16 and over with a BMI greater than or equal to 30 in the previous 12 months, as recorded on practice disease registers. Although this measure is generally regarded as an underestimate of the true levels of obesity in the practice population it is useful in determining temporal and spatial patterns. In 2014/15 according to QoF approximately 14,200 adults registered with a Herefordshire general practitioner (GP) practice were recorded as obese, which represents 9.3 per cent of all patients aged 16+. Between 2009/10 and 2014/15 obesity prevalence in Herefordshire was consistently higher than both the national and comparator group, although all three measures followed similar temporal trends with increases evident up to 2012/13 followed by falls over the subsequent years (Figure 19).

Figure 19: Prevalence of adult obesity in Herefordshire, West Midlands and England, 2009/10 – 2014/15.

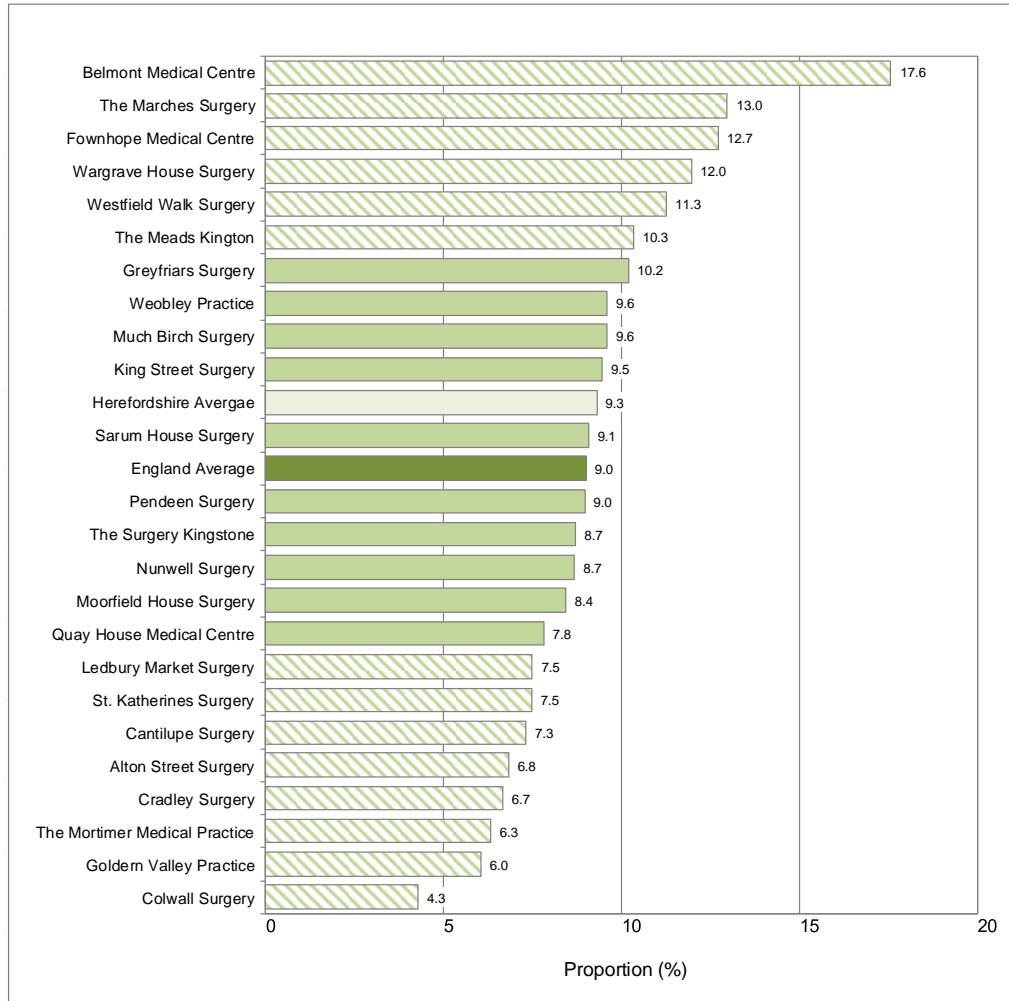


Source: PHE: Quality of Outcomes Framework

In 2014/15 obesity prevalence across Herefordshire as measured by QOF indicated that prevalence ranged from 4.3 per cent at Colwall to 17.6 per cent at Belmont, although the prevalence at Belmont is over a third greater than the next highest figure 13.0 per cent recorded at The Marches Surgery in Leominster. Six practices returned obesity prevalence significantly higher than the England level of 9.0 per cent, while the prevalence at eight practices were significantly lower than the national rate (Figure 20).

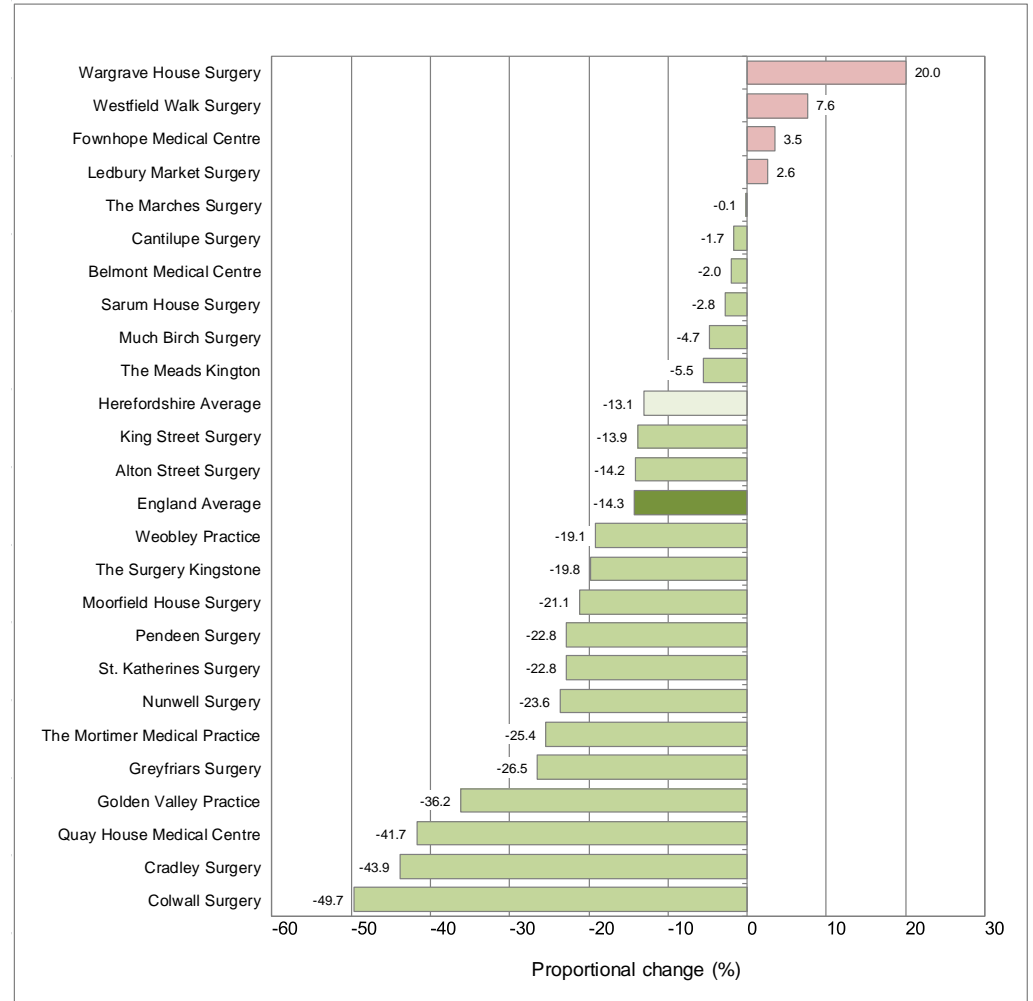
Between 2009/10 and 2014/15 the prevalence of obesity fell in 20 practices with the proportional falls varying between 0.1 and 49.7 per cent at The Marches Surgery in Leominster and Colwall respectively (Figure 21). Although some of these falls were marginal, 10 practices recorded decreases greater than 20 per cent. The prevalence of obesity increased over the same period at the remaining four Herefordshire practices with the highest increase observed at Wargrave House (20 per cent). Over the county as a whole the prevalence of obesity fell by 13.1 per cent compared with a national fall of 14.3 per cent.

Figure 21: Prevalence of obesity in patients 16+ years registered in Herefordshire GP practices, 2014/2015 (shaded bars = significantly different from England average).



Source: PHE: Quality of Outcomes Framework

Figure 21: Proportional change in prevalence of obesity between 2009/10 and 2014/15 patients 16+ years registered in Herefordshire GP practices.



Source: Herefordshire Council SIT

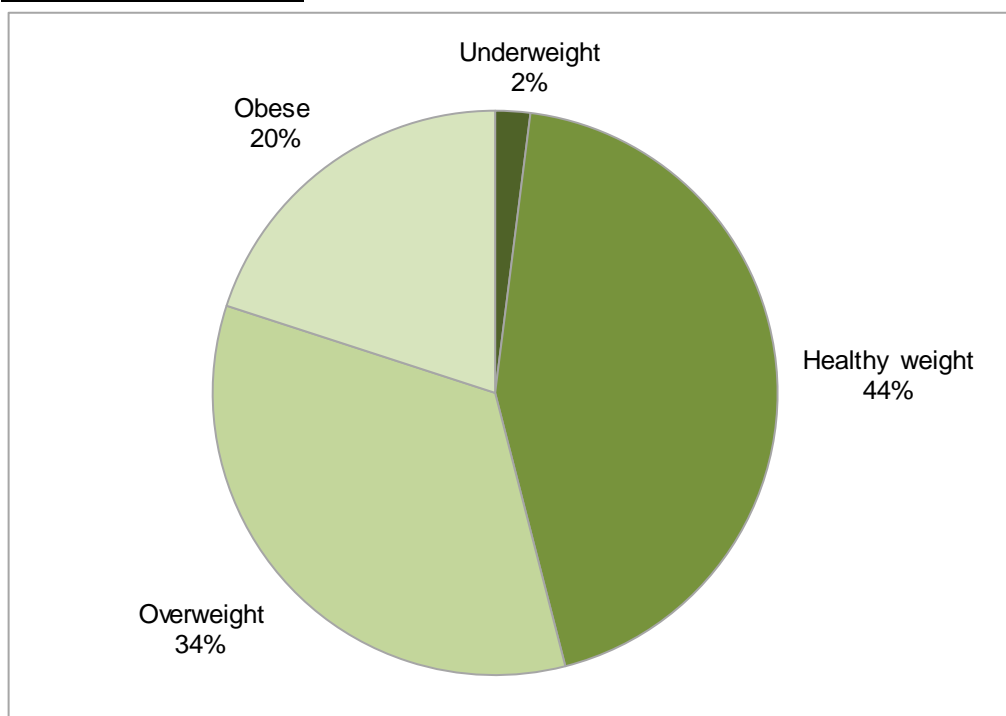
HEREFORDSHIRE HEALTH & WELL-BEING SURVEY

The Herefordshire Health and Well-being Survey which was conducted in 2011 gathered information based a sample of adults aged 16 years and over living in private households throughout the County. The survey provided information about the health of people in Herefordshire and included the collection specific height and weight data from which individual BMIs were calculated.

The key findings in relation to weight were:

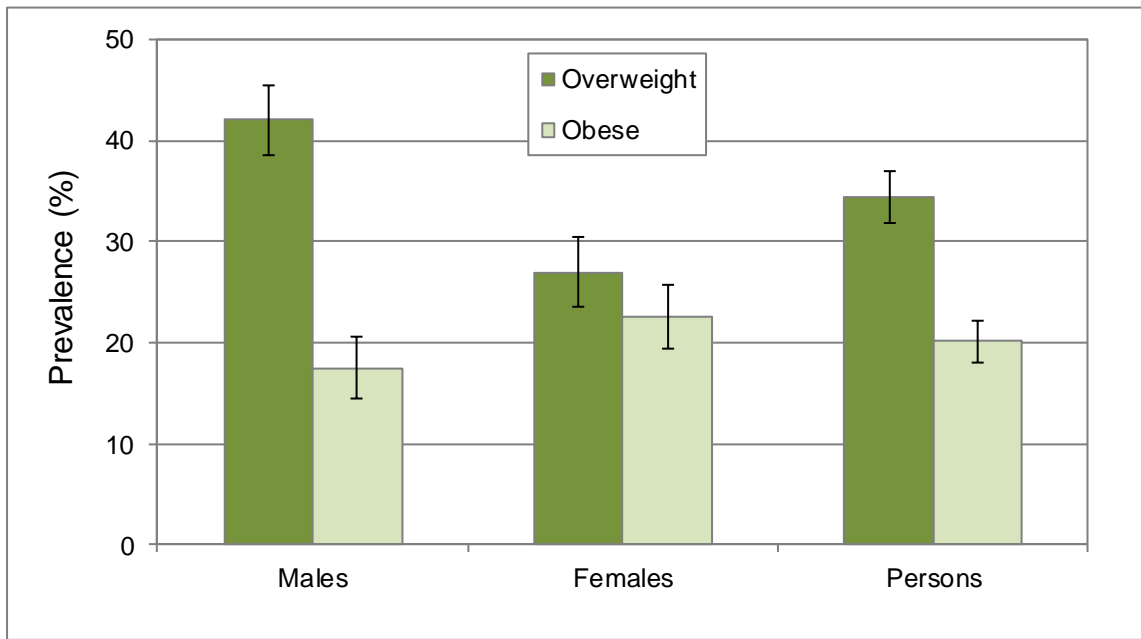
- 54 per cent of adults were classified as overweight, which included 20 per cent classified as obese (Figure 22).
- Men were significantly more likely to be overweight than women, although women were more likely to be obese (Figure 23).
- Around 40 per cent of young adults aged 16-24 years and 50 per cent of adults aged 25-44 years were either overweight (including obese). This proportion rises to almost 60 per cent in older adults aged 45–64 years, with a very similar proportion evident in elderly (aged 65+) – Figure 24.
- The proportion of each population quintile, on the basis of the IMD 2010 indices released by the Department of Communities and Local Government (DCLG), recorded as prevalence overweight or obese individuals does not correlate strongly with level of deprivation, although within the most deprived quintile of the county residents are significantly more likely to become morbidly obese than in less deprived quintile with over 5 per cent of the population having BMI >40 compared to less than 1 per cent across the rest of the county (Figure 25).

Figure 22: Proportion of adults in each BMI category in Herefordshire Health and Well-being Survey, 2011.



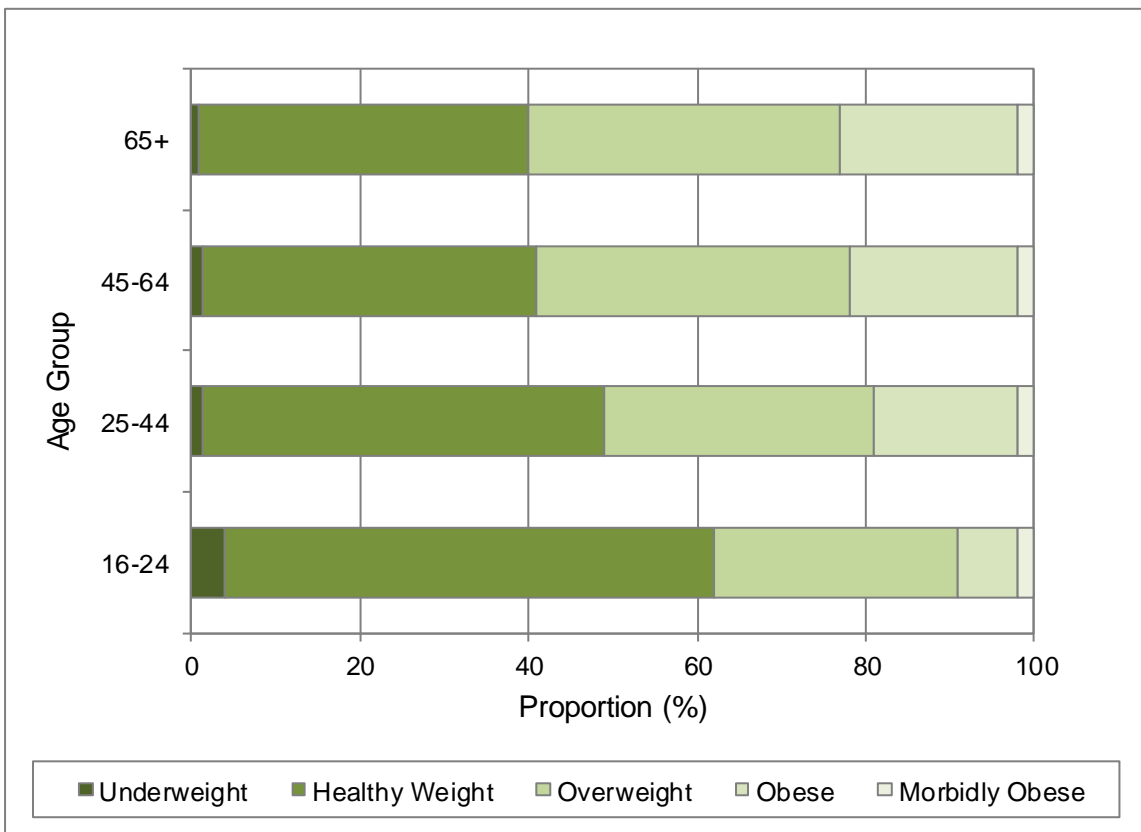
Source: Herefordshire Council SIT

Figure 23: Prevalence of overweight and obese adults by gender in Herefordshire Health and Well-being Survey, 2011.



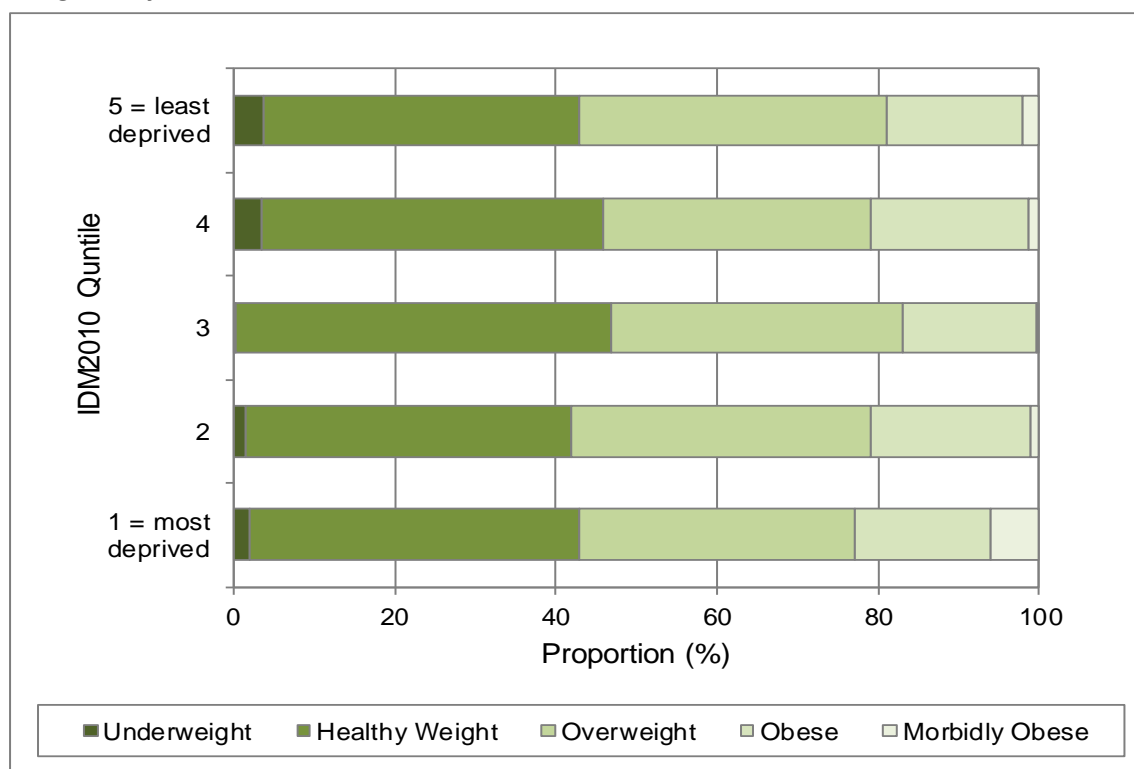
Source: Herefordshire Council SIT

Figure 24: Proportion of each BMI category by age group in Herefordshire Health and Well-being Survey, 2011.



Source: Herefordshire Council SIT

Figure 25: Proportion of each BMI category by IMD2010 quintile in Herefordshire Health and Well-being Survey, 2011.



Source: Herefordshire Council SIT

EXPECTED VERSUS REPORTED PREVALENCE

The expected prevalence of obesity (diagnosed and undiagnosed) among adult populations may alternatively be approximated by applying national age/sex specific rates derived from a model produced by the former Doncaster Primary Care Trust (PCT) (Table 3) to local GP practice lists of those aged 16 years and over.

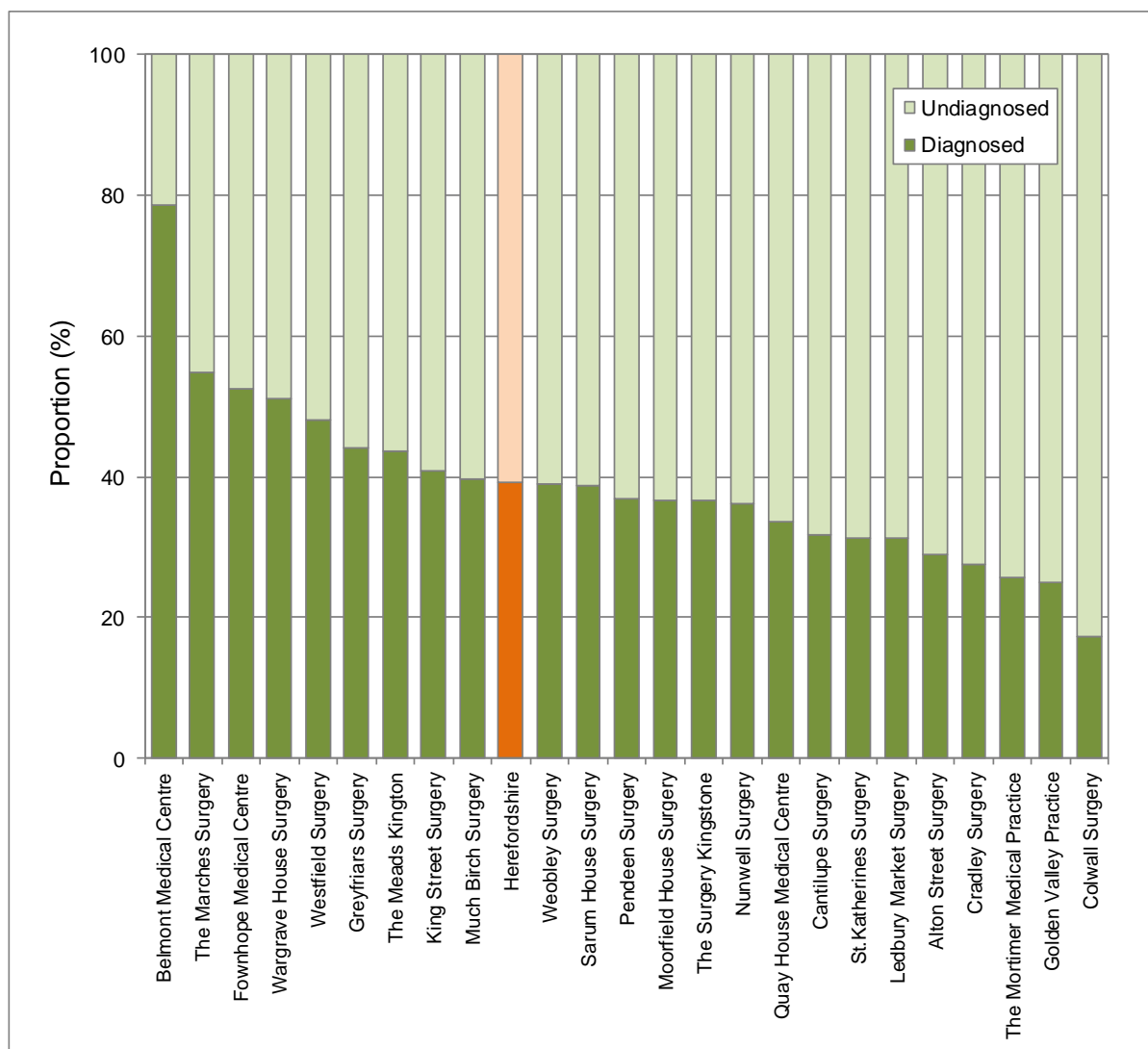
Table 3: Estimated national percentage obesity prevalence in men and women.

Age Band	Men	Women	Age Band	Men	Women
16-24	8.6	13.1	45-54	28.2	26.4
25-34	17.5	18.1	55-64	26.7	27.9
35-44	25.3	22.2	65-74	28.7	30.1
45-54	28.2	26.4	75+	20.9	26.3
55-64	26.7	27.9			

Source: Doncaster PCT

Applying the model to Herefordshire practices for 2014/15 shows the extent of the likely 'under-recording' of expected prevalence levels (Figure 26). Across the HCCG as a whole it is estimated that QOF only recorded approximately 39 per cent of expected obesity prevalence, which corresponds to 41,200 adults of the total modelled number of around 36,100 obese adults. This under-counting is also evident nationally. However, within the county the proportion of expected prevalence being recorded by QOF varied by practice from 17 per cent at Colwall to 79 per cent at Belmont. This would appear to suggest either more effective policies in operation at Belmont practice with regard recording obesity, or that the registered population of Belmont, which is one of the most deprived in the county and therefore more likely to suffer ill health, is considerably more likely to present. However, other practices with a similar demographic and socio-economic profile as Belmont, such as Westfield Walk in Leominster, have recorded only around 48 per cent of modelled obesity prevalence, which would suggest that deprivation may not be the most important factor at play.

Figure 26: Proportion of diagnosed and undiagnosed obesity prevalence in adults at each Herefordshire GP Practice, 2014/15.



Source: Herefordshire Council SIT

NHS HEALTH CHECK PROGRAMME

The NHS Health Check programme aims to help prevent heart disease, stroke, diabetes, kidney disease and certain types of dementia. Individuals between the ages of 40 and 74, who have not as yet been diagnosed with one of these conditions or have certain risk factors, will be invited (once every five years) to have a check to assess their disease risk, and will be given support and advice to help them reduce or manage that risk.

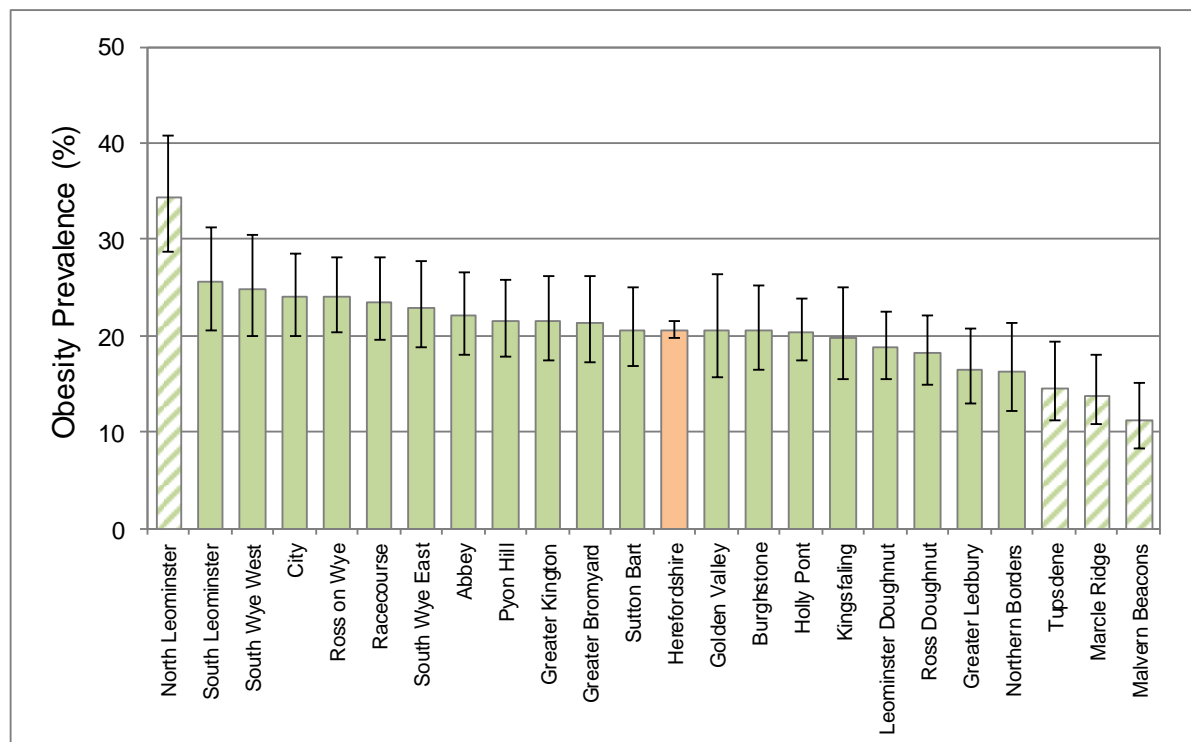
In 2014/15 a total of over 8,400 adults aged 39 to 74 years old were registered and checked through the NHS Health Check programme in Herefordshire; of these 1,200 are recorded as obese which represents 20 per cent of all those checked through the programme. When examining age and proportion of obese individuals it is evident that there is a marginally greater prevalence in individuals aged between 40 and 60 years compared to younger and older cohorts (Table 4).

Table 4: Obesity in adults aged 39 - 74 by 5 year age bands in Herefordshire, 2014/15.

Age Band	No. of Obese Patients in Age Band	Percentage of Age Band classified as Obese (%)
Age (39)	32	19.1
Age (40-44)	219	21.3
Age (45-49)	249	21.1
Age (50-54)	306	22.3
Age (55-59)	261	21.9
Age (60-64)	254	19.5
Age (65-69)	247	18.9
Age (70-74)	158	17.1

There is a wide variability in prevalence of obesity in adults recorded at the MSOA level across the county in 2014/15, with a range of between 11.3 and 34.5 per cent. This suggests that across Herefordshire MSOAs prevalence of obesity varies by a factor of three. The highest rate was recorded in North Leominster at a level significantly higher than the Herefordshire level of 20.6 per cent, while prevalence in Tupsdene, Marcle Ridge and Malvern Beacons were significantly lower than the Herefordshire average (Figure 27). Across Herefordshire as a whole 1.4 per cent of adults were recorded as morbidly obese (BMI \geq 40).

Figure 27: Prevalence of adult obesity in Herefordshire MSOA, 2014/15.



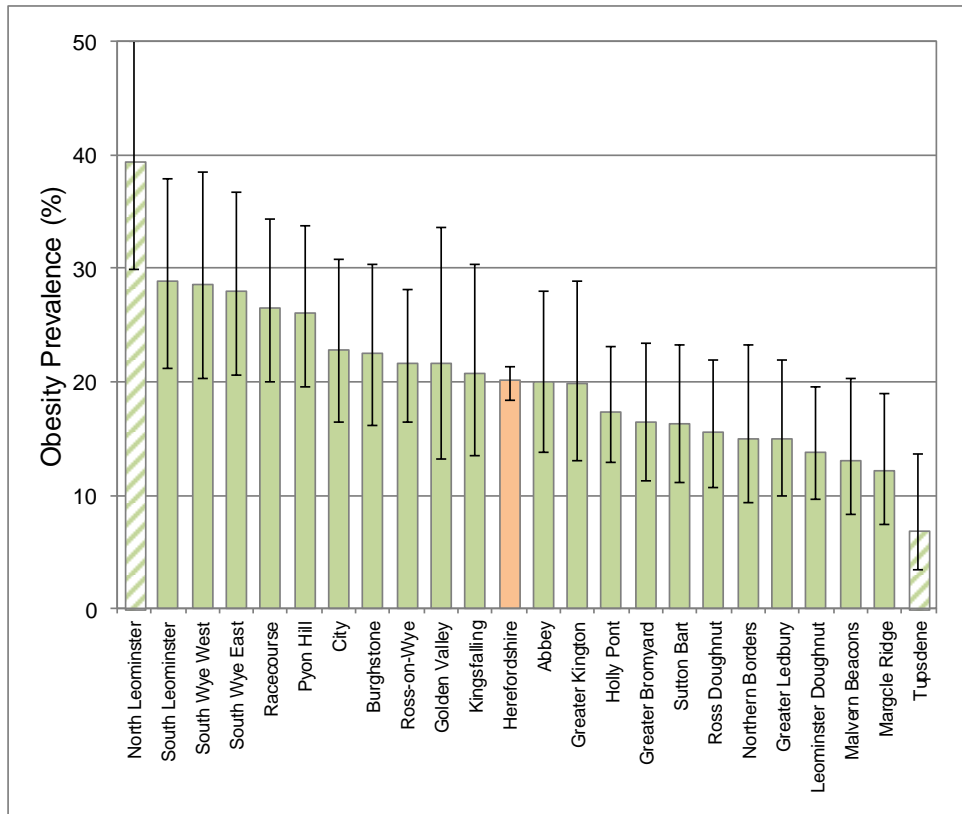
Source: Herefordshire Council SIT

For adult females obesity prevalence was also highest in North Leominster at 39.5 per cent. This was the only figure significantly higher than that for Herefordshire (20.1 per cent) as a whole (Figure 27). The only MSOA to return a prevalence lower than the county figure was Tupsdene (6.9 per cent). The proportion of adult females categorised as morbidly obese across Herefordshire was 2.3 per cent.

For adult males obesity prevalence was also highest in Ross-on-Wye (29.0 per cent), although no individual prevalence was significantly higher than the county wide figure of 21.3 per cent (Figure 28). The lowest male obesity prevalence was recorded at Northern Borders (11.9 per cent), although this figure was not significantly lower than the county prevalence. The proportion of adult males categorised as morbidly obese across Herefordshire was 0.8 per cent.

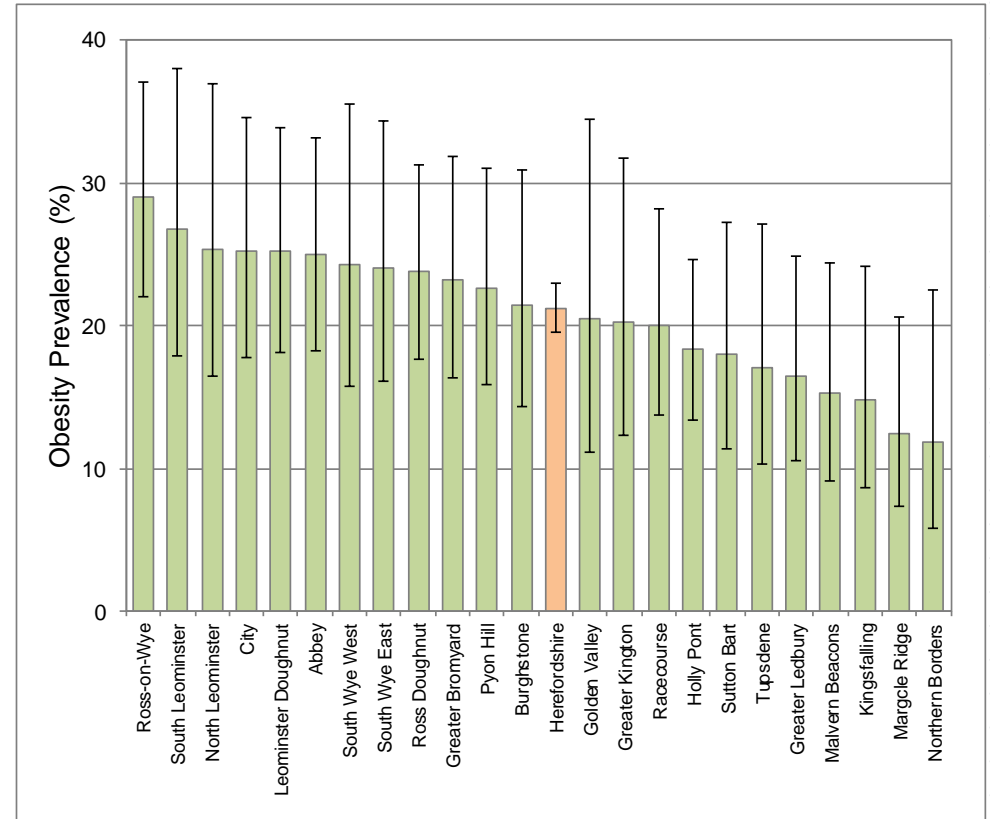
While there were no significant differences between the male and female obesity prevalence in each MSOA or for the county as a whole, the prevalence of morbidly obese was significantly higher for females than for males.

Figure 28: Prevalence of adult female obesity in Herefordshire MSOA, 2014/15.



Source: Herefordshire Council SIT

Figure 29: Prevalence of adult male obesity in Herefordshire MSOA, 2014/15.

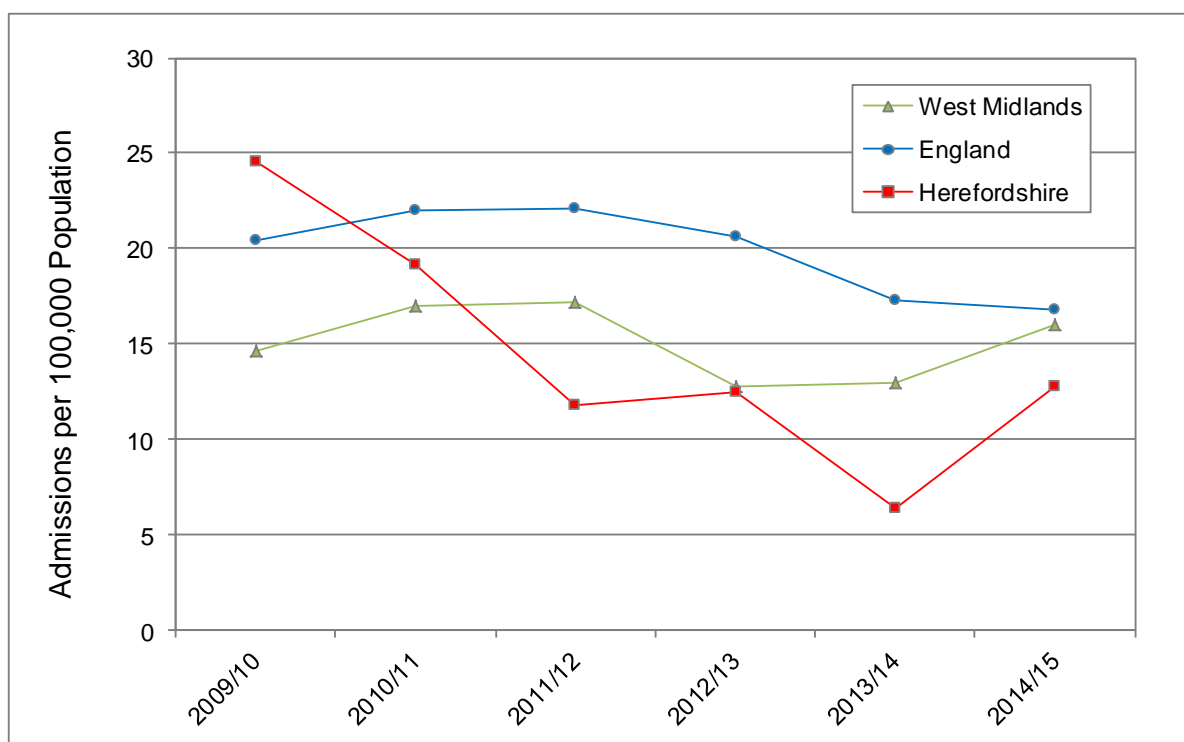


Source: Herefordshire Council SIT

HOSPITAL ADMISSIONS

Between 2009/10 and 2013/14 the admission rate for patients where obesity was the primary diagnosis had shown a general decline in Herefordshire from 24.6 to 6.4 per 100,000 population, although in 2014/15 the rate increased to 12.8 per 100,000 (Figure 30). Over this period the national rate has also shown a general decline, particularly since 2011/12 during which time the rate fell from 22.1 to 16.8 per 100,000. Across the West Midlands as a whole the rate has fluctuated with no distinct trend evident and the 2014/15 figure (16.0 per 100,000) was slightly higher than that for 2009/10 (14.6 per 100,000). In 2009/10 the Herefordshire rate was greater than both the national and regional rates, although since 2013/14 the local rate has been less than these headline rates.

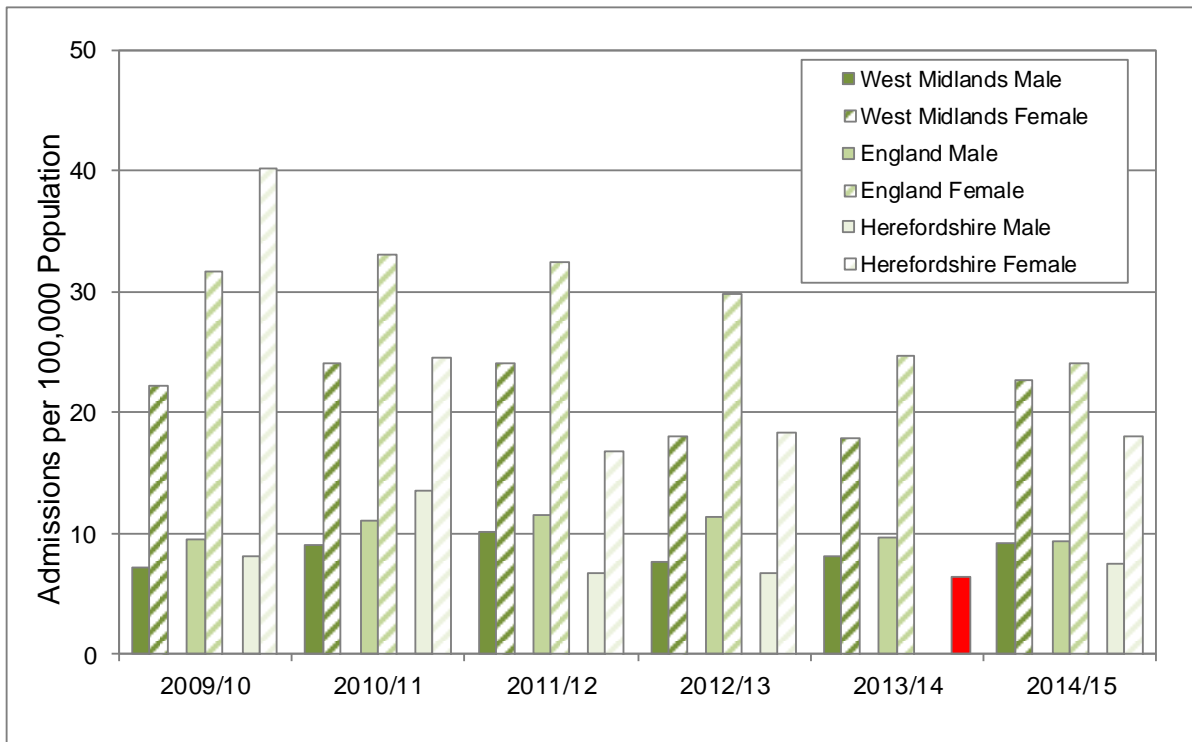
Figure 30: Directly standardised admission rate with a primary diagnosis of obesity in Herefordshire, England and the West Midlands, 2009/10 to 2014/15.



Source: HES

Since 2009/10 the number of females admitted with a primary diagnosis of obesity in Herefordshire has been higher than that for males, with the female rate being on average almost three times the male rate (Figure 31). Similar patterns were evident in both the national and regional figures with the female admission rates being over two and a half times the male rate in both cases.

Figure 31: Directly standardised admission rate for males and females with a primary diagnosis of obesity in Herefordshire, England and the West Midlands, 2009/10 to 2014/15. (Red bar indicates all admissions in Herefordshire in 2013/14 as no differentiation between genders available)



Source: HES

PHYSICAL ACTIVITY

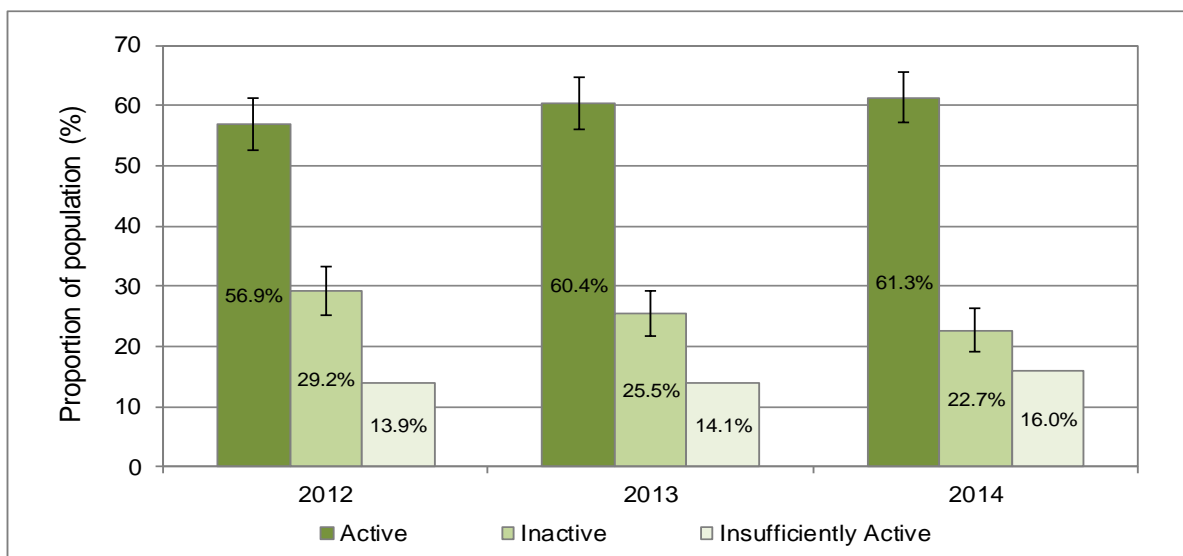
Physical inactivity is the fourth leading risk factor for global mortality accounting for 6 per cent of deaths globally. People who have a physically active lifestyle have a 20-35 per cent lower risk of cardiovascular disease, coronary heart disease and stroke compared to those who have a sedentary lifestyle. Regular physical activity is also associated with a reduced risk of diabetes, obesity, osteoporosis and colon and breast cancer and with improved mental health. In older adults physical activity is associated with increased functional capacities. The estimated direct cost of physical inactivity to the NHS across the UK is over £0.9 billion per year.

Department of Health physical activity guidelines recommend that over a week adults should undertake a total of at least 150 minutes of at least moderate physical activity¹⁰. Moderate activity can be achieved through brisk walking, cycling, gardening and housework, as well as various sports and exercise. Alternately, an adequate level of activity can be achieved over a week by undertaking 75 minutes of vigorous intensity activity such as running, football or swimming. All adults should also aim to improve muscle strength on at least two days a week and minimise sedentary activities.

Sport England commissions the Active Peoples Survey (APS) which provides a comprehensive measure of participation in sport and recreation in England. The main measure is based on the percentage of adults playing at least 30 minutes of sport at a moderate intensity on at least four days in the last 28 days (equivalent to 30 minutes on one or more day a week) with the resulting categories: active, insufficiently active and inactive. Between 2012 and 2014 the level of activity increased across Herefordshire from 56.9 per cent to 61.3 per cent, while the level of inactivity fell from 29.2 per cent to 22.7 per cent, although the level of insufficiently active increased from 13.9 per cent to 16.0 per cent (Figure 32). When compared to comparator counties and unitary authorities the level of inactivity in Herefordshire is less than the average for the group, while activity levels are higher than the group average (Figure 33).

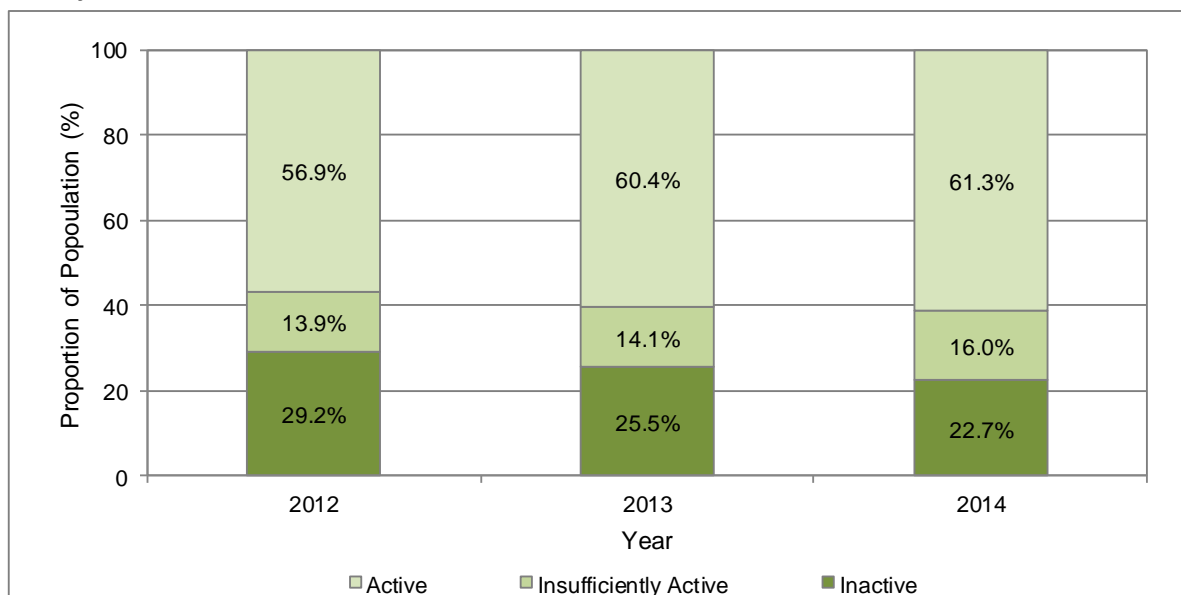
Figure 32: Proportion of population of Herefordshire classed as active or inactive according to Active People Survey, 2012 – 2014.

¹⁰ Physical activity guidelines for adults (19-64): Factsheet 4. Department of Health, 2011.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_127931



Source: Active People Survey, Sport England

Figure 33: Activity profile of Herefordshire, nationally, regionally and in comparator counties and unitary authorities, 2012 – 2014.



Source: Active People Survey, Sport England

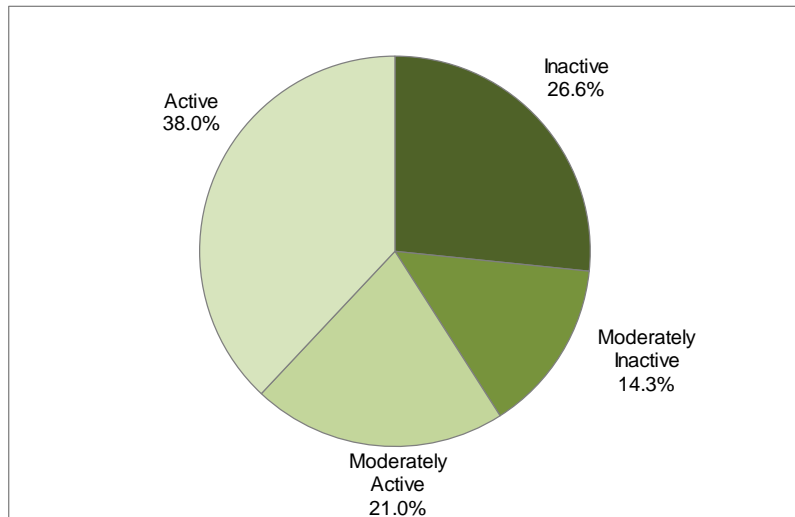
As part of the Health Check Programme patients are assessed for levels of activity by means of the general practice physical activity questionnaire. The questionnaire is a validated screening tool employed in primary care and provides a simple, four level Physical Activity Index (PAI) categorising patients as:

- Inactive: sedentary job and no physical exercise or cycling;
- Moderately inactive: sedentary job and some but <1 hour physical exercise and / or cycling per week or standing job and no physical exercise or cycling;
- Moderately active: sedentary job and 1-2.9 hours physical exercise and / or cycling per week or standing job and some but <1 hour physical exercise and / or cycling per week or physical job and no physical exercise or cycling;

- Active: sedentary job and ≥ 3 hours physical exercise and / or cycling per week or standing job and 1-2.9 hours physical exercise and/or cycling per week or physical job and some but < 1 hour physical exercise and / or cycling per week or heavy manual job.

Among participants in Health Check Programme across Herefordshire in 2014/15 38 per cent of individuals were classified as 'active', 27 per cent as 'inactive', while 21 and 14 per cent were classified as 'moderately active' and 'moderately inactive' respectively (Figure 33). On the basis of the findings of Health Check Programme, there are more Herefordshire residents who are being physically active than inactive.

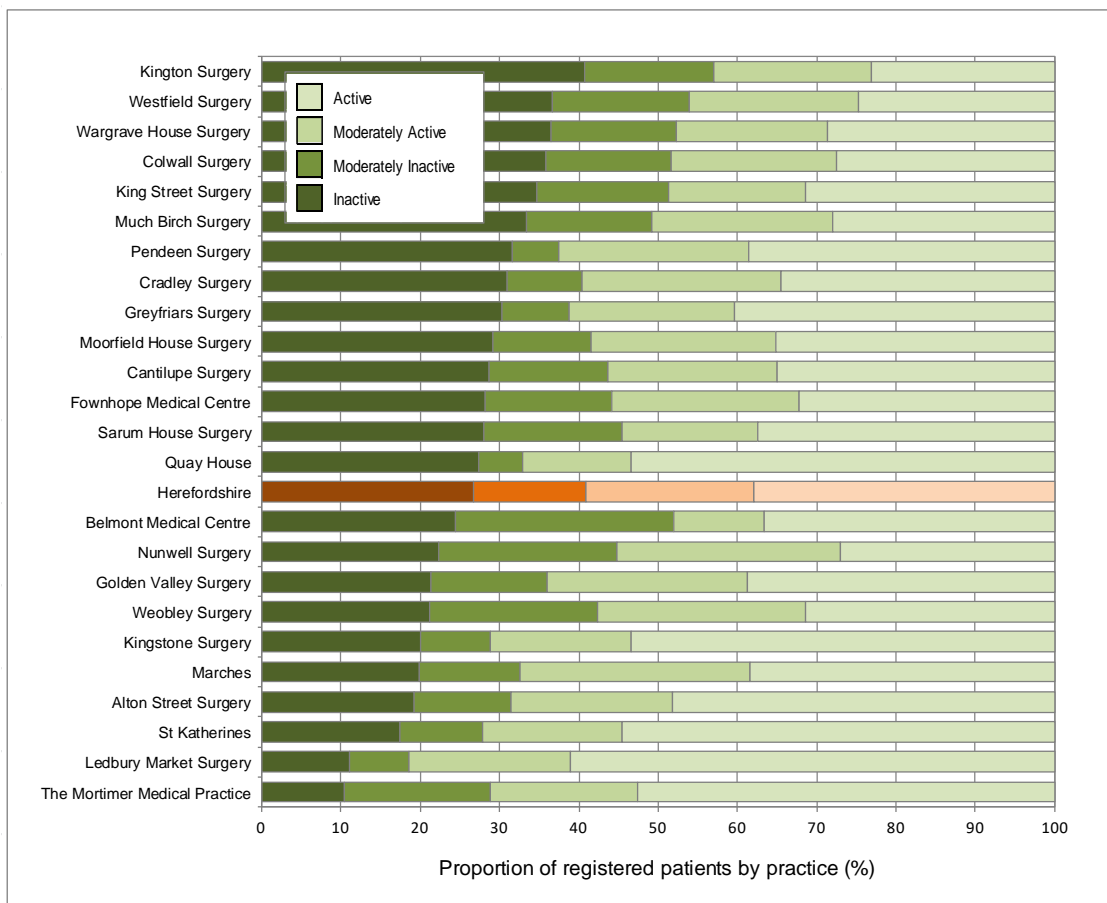
Figure 34: Proportion of population (aged 40+) of Herefordshire classed as active, moderately active, moderately inactive or inactive, 2014/15.



Source: GPPAQ

A wide variability in the prevalence of active individuals was evident between GP practices throughout Herefordshire with a range of between 25 per cent in Westfield surgery in Leominster to 61 per cent at Ledbury Market Surgery (Figure 35). The range for inactive individuals ranges from 10 per cent in the Mortimer Medical Practice in Kingsland to 41 per cent at Kington.

Figure 35: Distribution of activity levels across Herefordshire by practice, 2014/15.

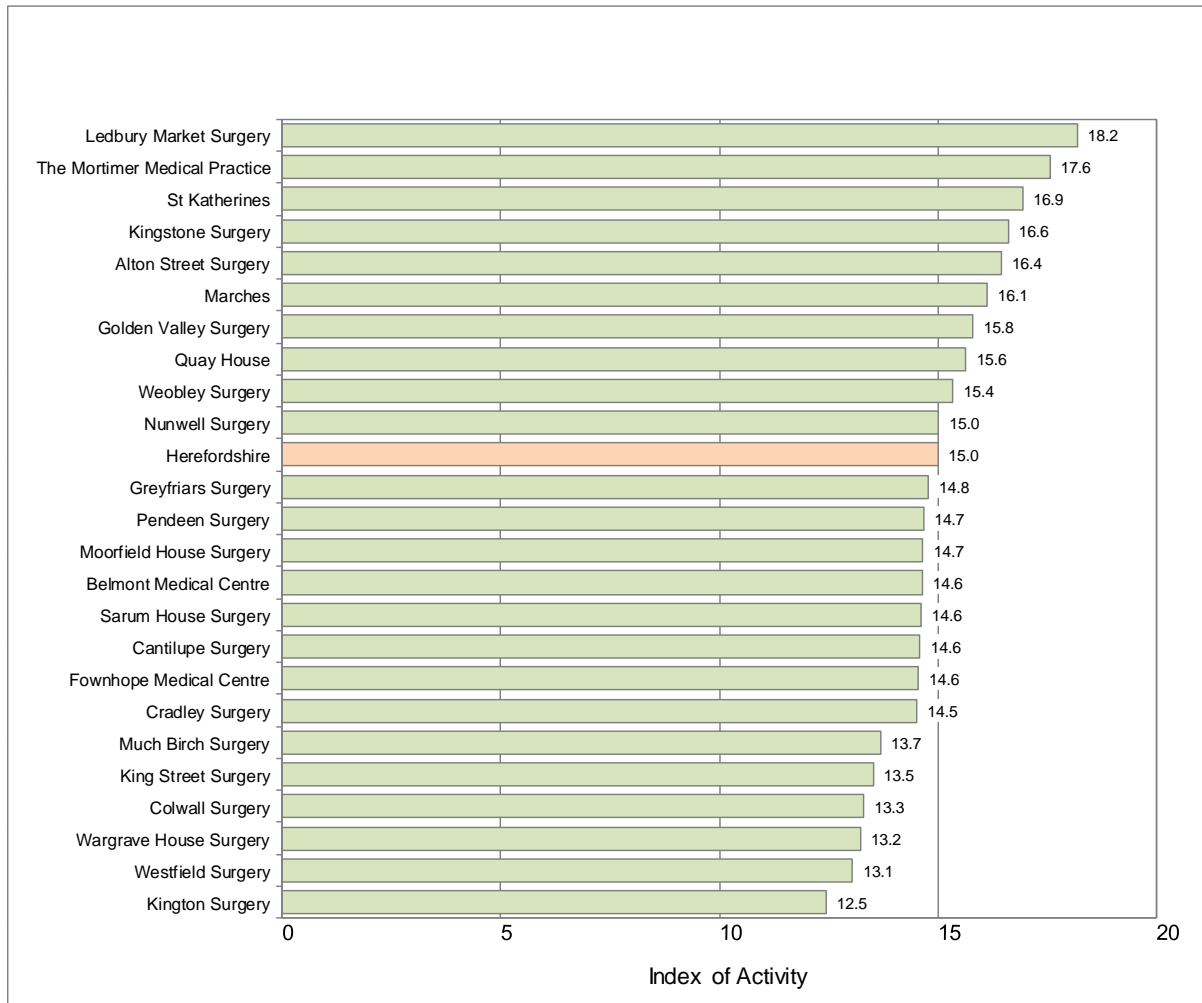


Source: GPPAQ

As an integrated measure of activity, an index of activity was calculated for each practice. The index was calculated first by standardising the prevalence of each activity category in each practice to the category means for the county as a whole. The resulting data were then multiplied by a co-efficient factor which increased geometrically from 1 for inactive, 2 for moderately inactive, 4 for moderately active and 8 for active. The resulting products were then summed for each practice to give a figure for the index of activity, with higher values indicating higher levels of activity. The resulting values for the index ranged between 12.5 at Kington to 18.2 at Ledbury Market Street with values at 10 out of 24 practices being higher than the county level (Figure 36).

The relationship between levels of activity and obesity is well understood and when looking at the level of activity some correlation was evident between obesity and an inactive lifestyle ($r = 0.19$) and an active lifestyle ($r = -0.29$). This gives an indication that where individuals are active prevalence of obesity is lower, which can have implications for other conditions such as cardiovascular diseases, hypertension (high blood pressure) and type 2 diabetes.

Figure 36: Index of Activity across Herefordshire, 2014/15.



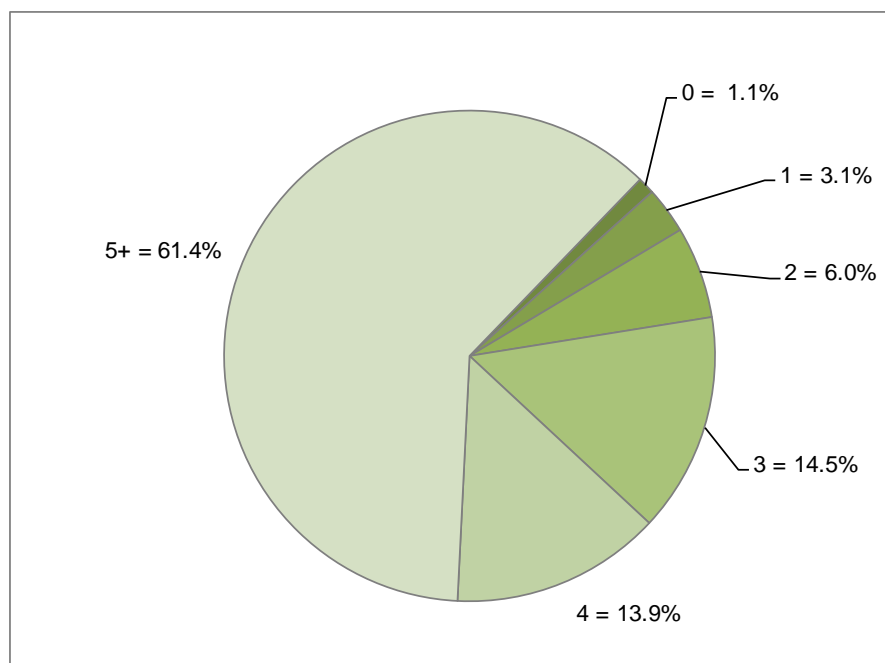
Source: Herefordshire Council SIT

FRUIT AND VEGETABLE CONSUMPTION IN HEREFORDSHIRE

As part of a healthy diet the Government recommends that adults consume at least five portions of a variety of fruit and vegetables each day; one adult portion corresponds to 80g of fresh fruit or vegetables. It is also recommended that children should also eat at least five portions of a variety of fruit and vegetables a day. However, the amount of food a child needs varies with age, body size and levels of physical activity and as a rough guide, one portion is the amount a child can fit in the palm of their hand. More details are available at <http://www.nhs.uk/Livewell/5ADAY/Pages/Portionsizes.aspx>.

Information collected from over 8,000 individuals across Herefordshire during in the Health Check Programme included data describing the number of portions of fruit and vegetables consumed per day. The level of consumption was divided into five categories: 0, 1, 2, 3, 4, and 5+ per day (consumption ranged from 0 to 20). More than 60 per cent of individuals consumed five portions or above of fruit and vegetable per day, while less than 1.1 per cent consumed no fruit and vegetable per day (Figure 37). Furthermore 31 per cent of participants had one portion, and less than 15 per cent of individuals consumed either three or four portions a day, respectively.

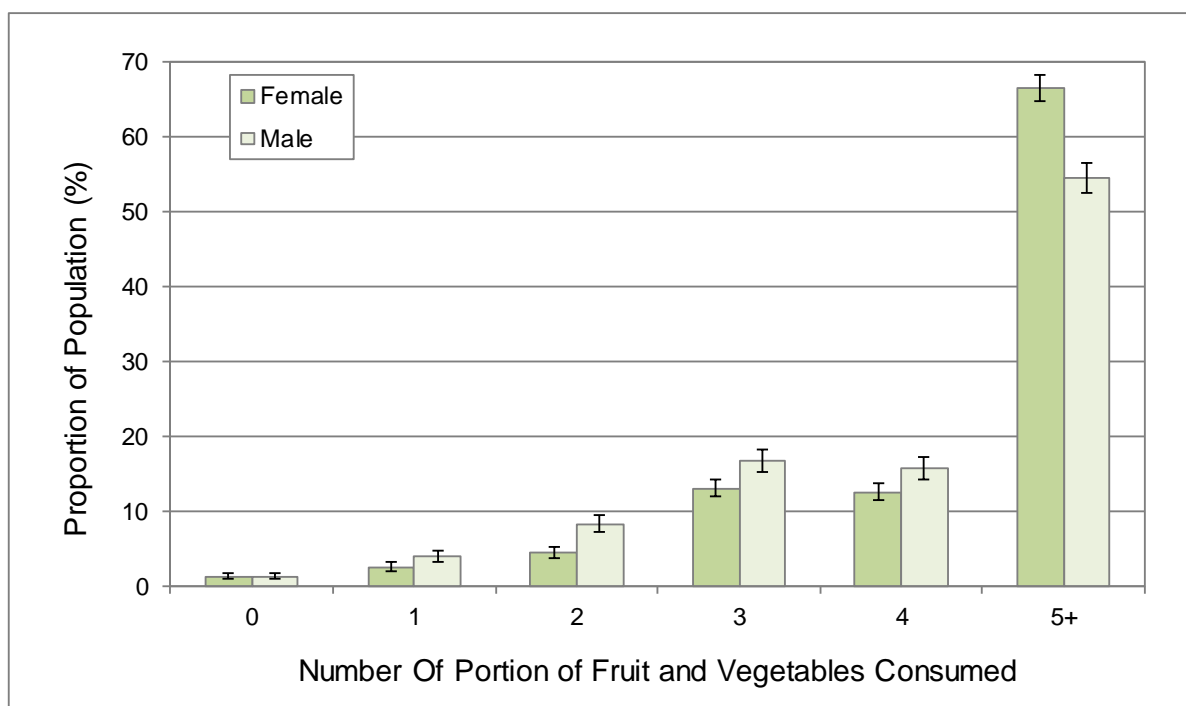
Figure 37: Number of portion of fruit and vegetables consumed per day by adults in Herefordshire, 2014/15.



Source: Herefordshire Council SIT

In 2014/15 there was some difference between the average number of portions of fruit and vegetables consumed by males and females. Females consume 4.7 portions per day which was significantly higher than the male figure of 4.3. However, when looking at the proportion of each gender consuming different numbers of portions some variation was evident. The proportion of females consuming five or more portions (66.6 per cent) was significantly higher than for males (54.5 per cent), while for those consuming between 1 and 4 portion per day the proportion of males was significantly higher than that for females in all consumption rate categories (Figure 38). There was no minimal difference between the proportion of males and females consuming no portions per day with both figures being marginally over 1 per cent.

Figure 38: Proportion of adult male and females consuming different numbers of portions of fruit and vegetables in Herefordshire, 2014/15.



Source: Herefordshire Council SIT

Some variability in level of consumption is evident across the county with the greatest proportion of individuals consuming 5+ portions per day occurring in the Northern Borders MSOA (89 per cent) and the lowest in the City (45 per cent); the greatest proportion of individuals consuming no fruit or veg was recorded in the City (2.4 per cent) while no individuals reported consuming no fruit and veg in the Golden Valley and Greater Kington (Figure 39). It is interesting to note that the areas reporting both the lowest proportions of individuals consuming 5+ portions and the highest proportion consuming no portions are all in Hereford city.

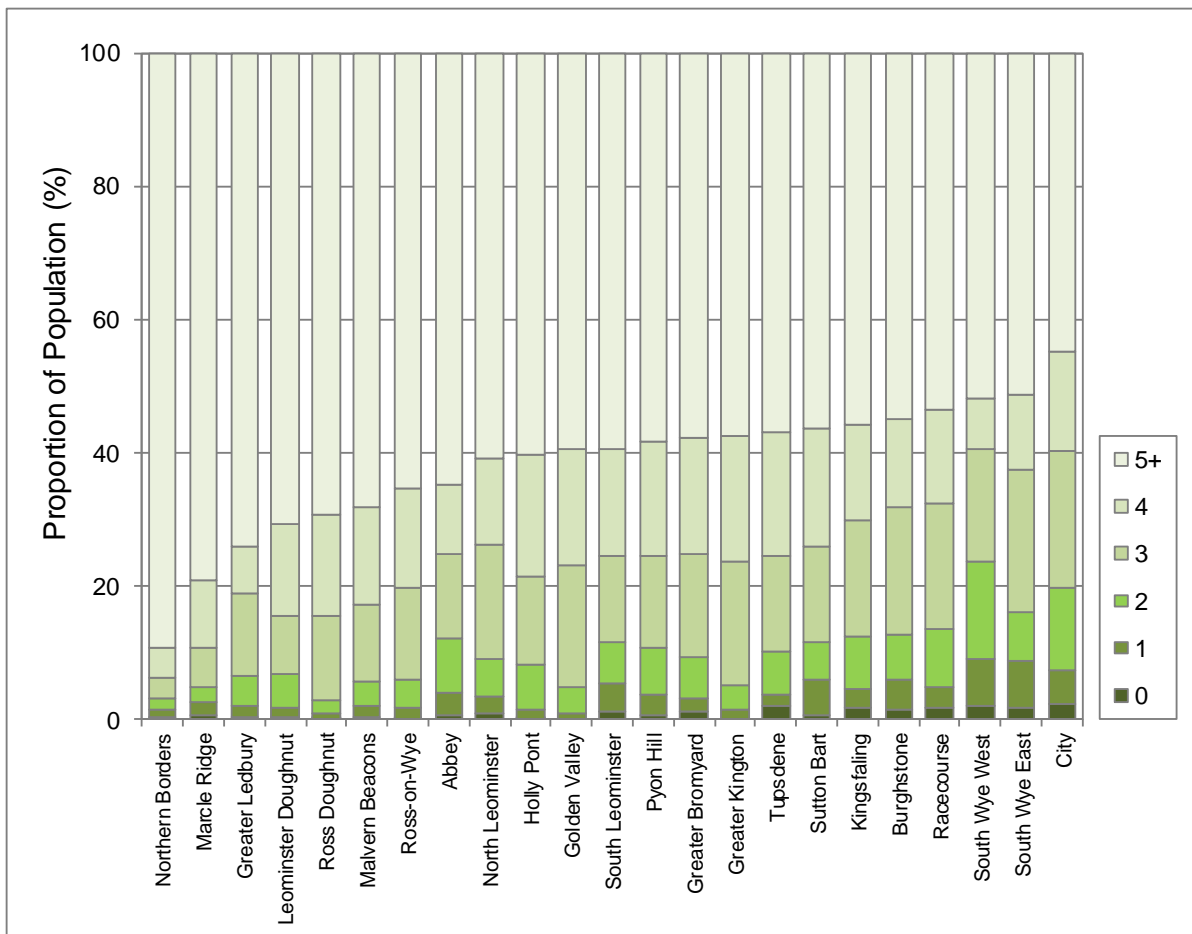
When comparing regional and national data collected as part of the Active People Survey for 2015 the proportion of the adult population meeting the recommended '5-a-day' on a 'usual day' in Herefordshire of 55.6 per cent is broadly similar to the national figure of 52.3 per cent, although higher than that for the West Midlands of 48.8 per cent.

It has been posited that promoting increased fruit and vegetable consumption, in the absence of specific advice to decrease consumption of other foods, appears unlikely to lead to weight gain in the short-term and may have a role in weight maintenance or loss¹¹. When looking at relationship between consumption of fruit and vegetables and obesity it is evident that there is some positive correlation between consuming 0 – 3 portions a day ($r = 0.25 - 0.55$), while for those individuals eating 5 or more portions there was a negative correlation (-0.5). Although these correlation coefficients are moderate the information can be considered as general indicators of trends prevalent

¹¹ Mytton, O.T., Nnoaham, K., Eyles, H., Scarborough, P. and Ni Mhurchu, C. (2014). Systematic review and meta-analysis of the effect of increased vegetable and fruit consumption on body weight and energy intake. BMC Public Health, 14:886

in the communities across Herefordshire. This would indicate a definite relationship between levels of obesity and diet across the county.

Figure 39: Proportion of adult consuming different numbers of portions of fruit and vegetables in each Herefordshire MSOA, 2014/15.



Source: Herefordshire Council SIT

DISCUSSION POINTS

The above discussions indicate clear evidence of the influence of diet and levels of activity on obesity patterns from which it can be concluded that the promotion of increased physical activity and healthy eating could be instrumental in improving the prevalence of obesity in Herefordshire. One clear way in which activity can be promoted is by developing planning to include considerations for active transport, sport, recreational activity and communal recreational spaces which will encourage active living. Promotion of physical activity requires the involvement and cooperation of all levels of government with a clear role for local government to create environments and opportunities for physical activity and active living.

By 2031 the population of Herefordshire is predicted to reach between 203,500 and 205,500, an increase of between 9 and 10 per cent. This increase in population will put increased pressure on existing services and infrastructure with the provision of adequate housing being paramount. As part of the Local Plan for Herefordshire the Herefordshire Core Strategy proposes to deliver 16,500 new homes by 2031 around the county including Hereford and the five market towns, while a third will be built in rural areas. In relation to this planned expansion Herefordshire Council's Local Transport Plan (LTP) aims to support the growth of the city by improving traffic management and promoting walking and cycling for the majority of trips. In the market towns the emphasis is on reducing the need to travel by private car by locating new development within walking and cycling distance of existing and new facilities and improving and extending sustainable transport routes. The strategy identifies a number of strategic and non-strategic transport measures along with smarter travel initiatives to encourage this shift from private cars to public transport, walking and cycling.

The role of walking and cycling in creating liveable places, promoting health improvements and social inclusion has not always been recognised. For instance, an hours cycling burns approximately 300 calories and can have a positive effect on how you feel, while regular cyclists enjoy a fitness level equal to that of a person ten years younger. Furthermore, cycling is one of the most sustainable modes of personal transport being not only cheap, it also causes zero emissions. The inclusion of plans encouraging both walking and cycling, allied to reduced urban traffic and associated positive impacts on air quality, will have benefits, particularly in the city and market towns. It is important that such facilities are in place as the urban areas and population expand in line with the so that the habit of walking and cycling is adopted early, rather than later when it may be more difficult to alter adopted behaviours. Consequently, the early completion of any such transport links should be a priority in the construction schedule to maximise health benefits and minimise increased pressure of health care resources.

Herefordshire Council's Destination Hereford project, funded by the Department for Transport's Local Sustainable Transport Fund, was launched in 2011 with the aim of reducing short distance journeys by car in favour of increasing walking, cycling, car sharing and public transport use. In relation to increasing walking and cycling the project aims to complete the Hereford Greenway which is a traffic free route including the new river crossing improving access to Rotherwas Industrial Estate, and to develop the city cycle network for which 18 walking and cycling schemes have been identified. The Department for Transport praised the plan citing its strong focus on increasing active travel, such as walking and cycling, and reducing obesity, as well as improving sustainable access for rural communities through the park and share scheme. Herefordshire Council has recently submitted a funding bid in order to extend the Destination Hereford project through 2016/17 with a particular focus on walking and cycling.

Tackling obesity and improving the population health through good nutrition is a major public health issue due to the importance of poor diet as a major contributor to chronic disease and premature death in England. Nationally, average intakes of saturated fat, sugar, and salt are above

recommended levels while intakes of fruit and vegetables, fibre and some vitamins and minerals are below guideline levels, while average intake of artificial trans-fatty acids are within recommendations. Overall, evidence shows that calorie intake exceeds recommendations. Herefordshire Council has produced guidance on diet in the document “Healthy Lifesyles” which also includes other relevant information on adopting healthier lifestyles.

One issue which is also of concern in relation to healthy diet is the consumption of fast food as there is a growing body of evidence on the association between exposure to fast food outlets and obesity. Similarly, there is strong evidence linking the availability of fast food outlets and increasing level of area deprivation . Data released by PHE in 2016 indicate that there are 103 fast food outlets across Herefordshire, which corresponds to 55 outlets per 100,000 population compared to the national rate of 88 per 100,000. The majority of outlets are located in Hereford and the market towns as indicated in Figure 40. The map also indicated that an appreciable number of outlets are located within areas of higher deprivation. The combination of deprivation, fast food outlets and deprivation in Herefordshire is an important picture and possible one which could be used to underpin campaigns promoting healthy eating and physical activity.

Figure 40: Distribution of the fast food outlets in Herefordshire with IMD 2015 by county decile for Herefordshire LSOA indicated.

