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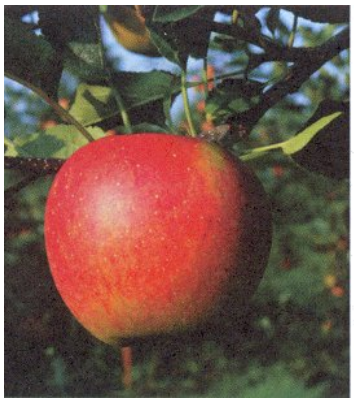
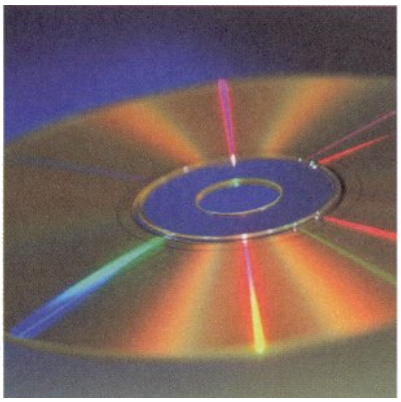
Second Report from the Kent 2005 Survey of Health and Lifestyle: Obesity and Physical Activity

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Health and Social Survey Unit

Centre for Health Services Studies
University of Kent

Commissioned by Kent County Council

April 2007

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Acknowledgements

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Kent has taken exercise as the key to monitoring progress towards a healthier Kent. Discussions with Kent County Council, Department of Health and the Office of Deputy Prime Minister have identified the importance of measuring how many people are undertaking at least moderate activity five times a week.

We would also like to thank the team at CHSS who have administered the survey, painstakingly ensuring that all the questionnaires were delivered, receiving calls from participants and receiving and entering completed questionnaires; in particular we would like to thank Tony Rees and Paula Loader.

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http://www.kent.ac.uk/chss/docs/second_obesity_report.pdf

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SUMMARY

Obesity is a major health problem in England, the prevalence has more than tripled over the past two decades. Kent County Council commissioned a new Health and Lifestyle Survey in 2005; this report aims to provide planners with baseline information on obesity and physical activity.

Kent 2005 is a postal survey of 22,861 people randomly selected from the GP Registration database across Kent. It has been designed so that the same people can be followed up in the future. The response rate was 27%, the survey is more representative of older people than younger people and of young women than of young men, and older men than of older women**.**

Obesity (BMI of 30 or more) was measured using BMI calculated from self-reported height and weight. Women in the sample showed obesity at an earlier age, but present a flatter curve and more obesity in older age groups than men. The highest rates of obesity (i.e. in double figures) were seen between the ages of 30 and 79 for men and between 20 and 84 for women. For ages less than 25 and more than 75 the numbers are small and variance thus too great to be able to rely on the figures.

The data was standardised using the Kent 2004 population estimates; on average it can be said that the 2005 baseline prevalence of obesity in Kent is 14.3% for men and 15.8% for women, or 15.3% overall. Using data from the Kent and Medway 2001 and the Kent 2005 surveys the increase in obesity over the 4.5 years 2001 to 2005 for all people aged 16 and over in Kent from 2001 and 2005 is estimated to be10.9%.

A comparison of Kent 2005 with England 2004 shows that on the whole people in Kent are less likely to be obese than in England as a whole, however the Kent data is self reported and the England data comes from direct measurement.

49.3% of survey participants said they consumed at least 5 pieces of fruit and vegetables a day. There was quite a large difference between men and women with 41.8% of men compared to 53.5% of women who responded to this question consuming 5 pieces a day.

64.6% of respondents claimed they were eating a healthy diet; another 21.3% said they were eating a healthy diet once in a while. This left 13% who admitted they were not eating healthily. Obese people indicated that important factors preventing them eating a healthy diet include information, motivation, expense and preparation time.

73.2% of all respondents said they were trying to keep their weight down regardless of their BMI. Only 4.2% altogether admitted to being very overweight; even amongst people with a BMI of 30 or more only 18.5% said they were overweight.
64% of people with a BMI less than 30 were trying to keep their weight down;
92.8% of people who perceived themselves to be a little overweight also said they were trying to keep their weight down; however 29.5% of obese people who perceived themselves as being very over-weight also responded that they were 'very over-weight' when asked their approach to weight management.

The most popular activity to help with keeping weight down was going to the gym (25.5%) followed by dietary advice (20.5%) and weight monitoring (19.1%). Other options around exercise included a personal trainer (14.9%) group exercise (13.8%) and fun runs (4.6%); options around diet included weight watchers or similar (13.7%) and meeting others with the same problem (5.9%). Support provided by professional was also a popular option including GP (9.8%) and practice nurse (8.2%).

Two questions asked about moderate physical activity. It is estimated that 25.7% of all men and 23.7% of all women were undertaking moderate physical activity for 30 minutes on 5 or more days a week[1]. 12.6% have said they undertake at least moderate activity for an hour or longer for 5 days or more a week, and another 13.2% have said they are moderately active for an hour or more on 3-4 days a week. The baseline figure is 24.2% moderately physically active for 30 minutes 5 days a week.

[1] Palmer A; Jenkins L, Hastie C. 2006. First Report on Physical Activity and Obesity from the Kent 2005 Health and Lifestyle survey

Using the data from the 2 questions combined it is estimated that 28.7% people in the survey have actually said they are at least moderately active for 30 minutes or longer 5 days a week; this number is not weighted for age or sex and, because of the way the question was worded, and the fact that some respondents have clearly not replied to the 30 minute question when they were moderately active for an hour or longer, the findings are actually quite difficult to interpret and the baseline is therefore unchanged.

The new analysis (since the first report) shows that 250 participants (4.3%) gave no answer to either question; 1318 participants (22.7%) were not active at all or less than one day a week (hereafter referred to as 'inactive'). There is no difference between men and women in their reporting of inactivity, except that women were more likely not to answer the question. Older people were significantly more likely not to answer the question, and were also less likely to be active.

There was a difference how active people were according to the BMI of participants; there is a marked age difference both in the amount of activity undertaken and between men and women. Young men (aged 16-24) in this sample were also more active than young women whether or not they were obese.

22.8% of men and 20.3% of women in the survey reported fair or poor health. 44.1% of men and 39.7% of women reported a long term illness or disability, both increasing with age. 17.4% reported **both** fair or poor health **and** long standing illness or disability and 4.3% said their general health was fair or poor but did not report any long standing illness or disability.

People whose BMI was less than 30 were more likely to report excellent or very good health and less likely to report a disability than people with a BMI or 30 or more; this is true for both men and women. There was very little difference between men and women and it is estimated that the presence of a long-standing illness or disability is more important – or – that obese people become disabled as a result of their weight problem.

29.4% of obese men and 27.0% of obese women reported they had a disability and their health was fair or poor; twice as many people with a BMI of 30 or more reported both long standing illness or disability and fair or poor health as those with a BMI less than 30. 39.2% of men and 41.6% of obese women reported their health as good or excellent and no disability. People who did not provide the survey with their weight have similar or more serious health problems to obese people.

27.0% of the sample said their health limited them a lot for vigorous activities, and 32.4% were limited a little. 8.3% of the sample said they were limited a lot in relation to moderate activities, and 17.6% were limited a little. There was very little difference between men and women for vigorous activities, women were slightly more likely to be limited in moderate activities. People with a long standing illness or disability and who are obese are more limited in their ability to exercise. This increase with age in both men and women.

Those not providing a response on moderate activity were similar in most respects to those who were inactive, i.e. they said they were in fair or poor health, were more likely to say they suffered from long standing illness, were limited by their health in ability to undertake moderate activity and to climb stairs; however there were fewer men, they were older, and no more likely to be obese than active people. It may be concluded that many in this group of non-responders are frail and elderly women who are unable to be active.

People who did not respond to questions relating to weight had a high incidence of all these chronic problems; it seems that those who were most likely to be suffering long term illness were unable or unwilling to provide these details.

Inactive people tended to be older, women, obese, and to have fair or poor health. There are real health problems for people who are inactive. There was a serious limitation in the ability to undertake activities of daily living In addition inactive people were seriously limited in their ability to get around. 42.4% of inactive people claimed their health limited a lot their ability to undertake vigorous activities compared to 21.2% of active people. 18.8% of inactive people claimed their health

limited a lot their ability to undertake moderate activities compared to 4.6% of active people.

Obese people (with a BMI of 30 of more) were more likely to suffer from chronic diseases, in particular asthma, arthritis, heart disease and diabetes; these are all conditions likely to affect ability to exercise. People with a BMI less than 30 were significantly less likely to be suffering from chronic diseases; however does the disease or the weight problem come first? It may be possible to analyse this by looking at cohort effects.

Using the survey findings the age standardised prevalence of diabetes is 4.42% +/- 0.49% and it is estimated that between 42,735 and 53,304 people in Kent in 2005 had diabetes 2005. At all ages men were more likely to have reported diabetes than were women.
Diabetes increases in prevalence with increasing age; this increase is greater amongst the obese population rising to 26.3% between the ages of 65 and 79.

People with diabetes were more likely to report they were limited in vigorous activities than non diabetics and more likely to report limitation if they were obese. This is true also for moderate activities when 21.9% of obese diabetics reported they were severely limited compared to 11.5% of non-diabetic obese people.

The prevalence of arthritis in the sample population is higher than diabetes; also the presence of arthritis increases steadily through the age groups in both obese and non-obese people although at every age it is more prevalent amongst obese people. Arthritis is reported more commonly amongst female respondents. 19.75% of the sample population said they suffered from arthritis; this increased from 2.9% aged 25-44 through 18.4% aged 45-64 and 33.1% aged 65-74 to 48.0% of respondents aged 75 and over.

Using the survey findings the estimated number of people in Kent with arthritis for 2005 is between161,491 and 178,517 and the age standardised prevalence of arthritis is 11.9% for men, 19.4% for women and 14.6% for all people.

The increase in the prevalence of arthritis occurs at an earlier age in obese people than in those with a BMI less than 30. The effect of obesity on the prevalence of arthritis appears to be the same for men as for women. There is some evidence from the data that people with arthritis are limited in the amount of physical activity they are able to undertake if their BMI is above 30.

Background

The Chief Medical Officer in his annual report 2002[2] identified the growing concern about the size of the problem of obesity[3] in England. It is well recognised that overweight and obesity increase the risk of this country's biggest killer diseases - coronary heart disease and cancer - as well as diabetes, high blood pressure and osteoarthritis.

The National Audit Office (NAO)[4] found that obesity is responsible for more than 9,000 premature deaths each year in England and reduces life expectancy on average by nine years. Obesity also has significant financial costs, both to the NHS and the wider economy. In common with other countries around the world, levels of obesity in England are rising. The consequences are serious.

Key Points identified by the Chief Medical Officer are :-

- Obesity levels in England have tripled in the past two decades; around a fifth (21%) of men and a quarter (24%) of women are now obese whilst almost 24 million adults are now overweight or obese.
- Obesity is also rising among children - in the five years between 1996 and 2001, the proportion of obese children aged 6-15 years rose by some 3.5%.
- Cases of maturity-onset diabetes are starting to emerge in childhood.
- Worldwide, around 58% of type 2 diabetes, 21% of heart disease and between 8% and 42% of certain cancers are attributable to excess body fat.
- Obesity costs the economy at least £2.5 billion a year - including costs to the NHS and cost to industry through sickness absence.
- Stemming the increase in obesity rates will need effective measures to improve diet and increase exercise levels in the population. Action by the food and fitness industries, as well as by government and local agencies, is needed.

[2] Annual Report of the Chief Medical Officer 2002: http://www.dh.gov.uk/PublicationsAndStatistics/Publications/AnnualReports/AnnualReportsBrowsableDocument/fs/en?CONTENT_ID=4094860&MULTIPAGE_ID=4875027&chk=6IWQj/

[3] Overweight and obesity are most commonly assessed through the Body Mass Index (BMI) - calculated by dividing a person's weight in kilograms by their height in metres squared (kg/m2). Obesity is defined as a Body Mass Index (BMI) of 30 or more; Overweight is defined as a BMI of 25-29

[4] National Audit Office 2001. Tackling Obesity in England. London. The Stationery Office. http://www.nao.org.uk/publications/nao_reports/00-01/0001220es.pdf

The Chief Medical Officer also highlighted that there are large social class differences, particularly in women. The Health Survey for England has shown that in 2001 amongst professional groups 14% of men and women are obese, compared to 28% of women and 19% of men in unskilled manual occupations. Amongst women, there are also important differences between ethnic groups: in 1999 obesity was 50% higher than the national average amongst Black Caribbean women and 25% higher amongst Pakistani women.

The rapid increase in obesity has also been mirrored by an increase in the prevalence of diabetes and 75% of adults in the UK with newly diagnosed type 2 diabetes are overweight or obese.

Purpose of the Report

This report was commissioned by Kent County Council and follows the First Report which explains the purpose of the survey (also commissioned by Kent County Council), details of the methodology and response to the survey and sets out the baseline for Physical Activity.

This Second Report concentrates on Obesity in the adult population of Kent, its prevalence and possible causes and relationship with the ability to undertake physical activity. It aims to provide service planners with baseline information to measure change, it is a rich source of data on motivation and health related behaviour, and also aims to provide information about related causes of obesity and inactivity such as chronic disease.

The Kent 2005 Survey

In autumn 2005 a postal survey of 22,861 people across Kent was carried out by the Health and Social Survey Unit at the Centre for Health Services Studies in the University of Kent, funded by Kent County Council.

The sampling frame was the GP registration list from the Kent Primary Care Agency. Names, addresses, date of birth and NHS number for patients aged 16 and over

registered with the Kent Primary Care Agency were downloaded and a one in fifty sample obtained electronically.

People in the derived sample were sent a postal questionnaire on 13th October 2005 together with the information sheet (printed on the inside cover of the questionnaire) and a stamp addressed envelope for returning the questionnaire. Non-responders were sent a reminder postcard on 5th November. Further contact was made with non-responders on 31st January when they were sent another questionnaire (after Christmas), and again on 28th March 2006 when they were sent a further reminder post card.

The questionnaire was available for completion on-line or in downloadable form on the CHSS computer, and through a web-site set up for the purpose and accessible through links on KCC, LA, NHS and CHSS web-sites. Very few people responded this way.

In all, 5800 people in Kent responded to the survey (a response rate of 27% when Post Office returns, people who died or moved away were removed). There are 5714 respondents who gave both age and sex and in some analyses the people who did not respond to age and/or sex have been excluded.

In this survey, women were better represented up to the age of 59; from this age onwards men were better represented than women. However the survey is more representative of older people than younger people and of young women than of young men, and older men than of older women. In terms of the distribution of responders, the representation of women does not quite mirror that of the survey population distribution and exceeds that of men to the age of 64 after which men are better represented.

More information on the survey and its representativeness can be found in the First Report[5]

[5] Palmer A, Jenkins L, Hastie C, 2006. First Report of Physical Activity and Obesity from the Kent 2005 Survey of Health and Lifestyle. CHSS Occasional Report.

Obesity in Kent

People responding to the Kent 2005 Survey were asked to provide their weight, height and waist measurement. It has been shown that people tend to over-estimate their height (especially older persons) and under-estimate their weight[6] and as the survey has relied on self reporting it suffers the usual expected bias when obese people tend to under-estimate their weight and under-weight people tend to over-estimate.

Height and weight were used to calculate Body Mass Index. Body Mass Index is missing for 4.6% of cases; both men and women declined to provide. 142 people declined to provide their height, 222 their weight and 1078 their waist measurement. Waist measurement has not been used in this report due to inadequate reporting particularly amongst women; men tend to know their waist measurement as this is required when buying clothes and does not carry the same stigma as for women.

914 respondents to the survey (15.76% crude rate) were calculated to have a BMI of 30 or more. The survey is to some extent under-representative of younger people especially men; it is also likely that people who have an obesity problem may not have responded, also those who are unwell (and perhaps under-weight). Further work is required to determine to what extent the response in different groups has biased the results. The standardised rates should be used in any planning exercises.

- 39.8% of male respondents were under weight or normal weight, 41.2% were over-weight and 15.3% were over weight or obese.
- 50.6% of female respondents who were under weight or normal weight, 28.2% were overweight and 16.5% were obese or grossly obese (Table 1).

[6] Taylor AW et al, 2006. How valid are self-report and clinic measurement using a large cohort study. Australia and New Zealand Journal of Public Health. 30 (3); 238-246

Table 1

Body Mass Index (BMI) of survey respondents by sex

	Males		Females	
	No	**Rate / 100**	**No.**	**Rate/100**
Under-weight - BMI = under 18.5	37	1.5	99	3.0
Normal weight - BMI = 18.5-24	929	38.3	1575	47.6
Over weight - BMI = 25-29	999	41.2	931	28.2
Obese - BMI = 30-34	293	12.1	369	11.2
Grossly obese - BMI = 35-39	64	2.6	122	3.7
Grossly obese - BMI = 40 or more	14	0.6	53	1.6
Data missing	91	3.7	158	4.8
Total	**2425**	**100**	**3303**	**100**

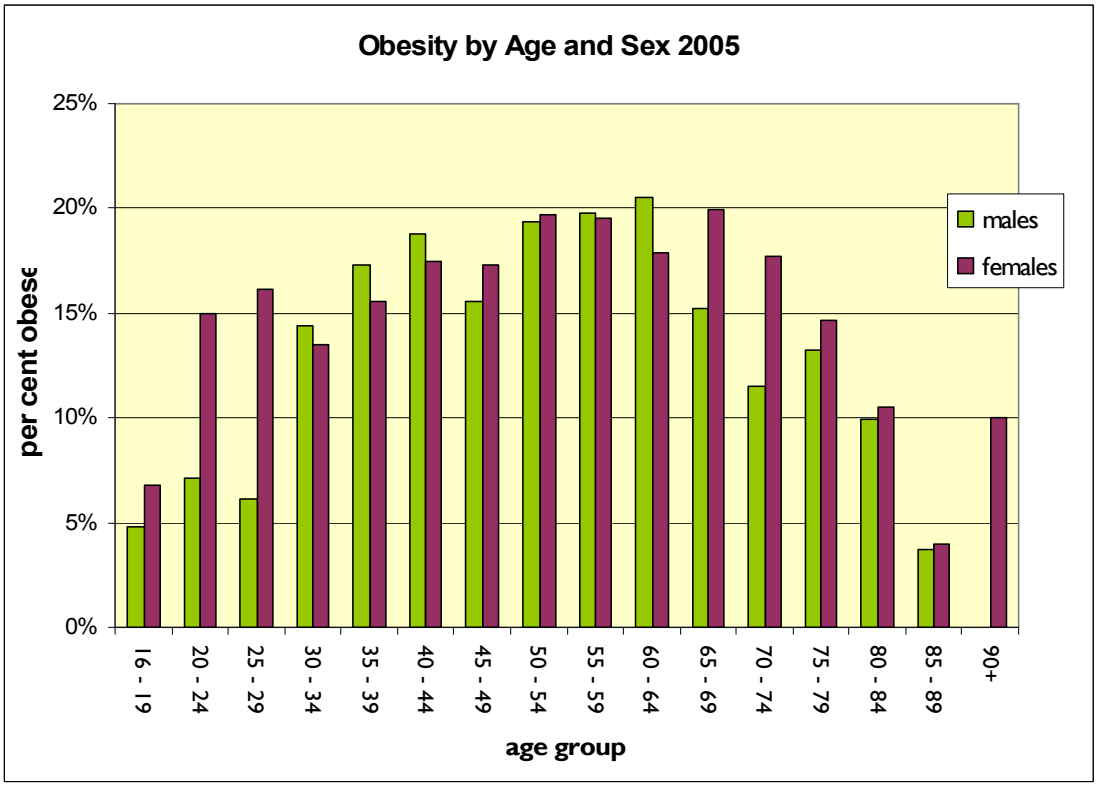
Women in the sample showed obesity at an earlier age, but present a flatter curve and more obesity in older age groups than men (Figure 1). The highest rates of obesity (i.e. in double figures) were seen between the ages of 30 and 79 for men and between 20 and 84 for women. For ages less than 25 and more than 75 the numbers are small and variance thus too great to be able to rely on the figures (Table 2).

Table 2

Respondents with a BMI of 30 or more (obese) by age and sex

	16-24	**25-44**	**45-64**	**65-74**	**75+**	**Total**
Males	7	77	188	65	34	371
	5.9%	15.8%	19.0%	13.4%	10.0%	15.3%
Females	27	144	239	86	47	543
	11.0%	15.8%	18.7%	18.9%	11.7%	16.5%

Figure 1



Using the survey data to estimate the prevalence of obesity in Kent

The sample data for people with a BMI of 30 or more were analysed by sex and 5 year age groups, and the resulting rates applied to the population estimates for the 2004 Kent providing estimates for the prevalence of obesity in the county in people aged 16 and over (Table 3)[7].

It is estimated[8] that in 2005 between 66,700 and 82,600 men (i.e. between 12.8% and 15.9%) and between 82,321 and 96,601 women (i.e. between 14.5% and 17.1%) in Kent were obese with a BMI of 30 or more.

On average it can be said that the 2005 baseline prevalence of obesity in Kent is 14.3% for men and 15.8% for women, or 15.3% overall.

[7] More information and tables can be found in the First Report.
[8] Because this is taken from a sample the confidence intervals have been estimated, the true number of obese people would be expected to lie between these figures

A similar calculation has been performed using the Kent and Medway 2001 survey data (see Table 3).

$$\text{Increase in obesity (\%)} = \frac{(\text{number of people obese in 2005}) - (\text{number of people obese in 2001}) \times 100}{\text{number of people obese in 2001}}$$

The increase in obesity over the 4.5 years between the two surveys (2001 to 2005) for all people aged 16 and over in Kent from 2001 and 2005 is 10.9% +/- 9.8%[9].

The increase in numbers of people who reported they are obese is estimated to lie between -4,300 and +17,725 for men and -885 and +18,690 for women[10].

Table 3

Estimated prevalence of obesity levels in the Kent population 2001 and 2005 and increase over time based on sample survey

	2001		2005			
	no	**%**	**no**	**%**	**Increase in numbers 2005-2001**	**% increase over 2001 [(2005-2001) x 100 /2001]**
	67,940	13.44%	74,649	14.33%	6710	9.88%
Males	+/- 7,624	+/- 1.51%	+/- 7,949	+/- 1.53%	+/- 11014	+/- 16.21%
	80,558	14.55%	89,461	15.80%	8,903	11.05%
Females	+/-14,752	+/- 2.66%	+/- 7,139	+/- 1.26%	+/- 9,787	+/- 12.15%
	149,743	14.14%	166,035	15.27%	16,292	10.88%
All	+/- 10105	+/- 0.98%	+/- 10,558	+/- 0.97%	+/- 14,614	+/- 9.76%

How does Obesity in Kent compare to the England population?

The Kent data were re-analysed by 10 year age groups so that valid comparisons could be made with the data from the Health Survey for England 2004[11] (see

[9] because this is an estimate from the survey sample, the true figure for the increase in obesity across all Kent has a 95% probability of being between 1.1% and 20.6%

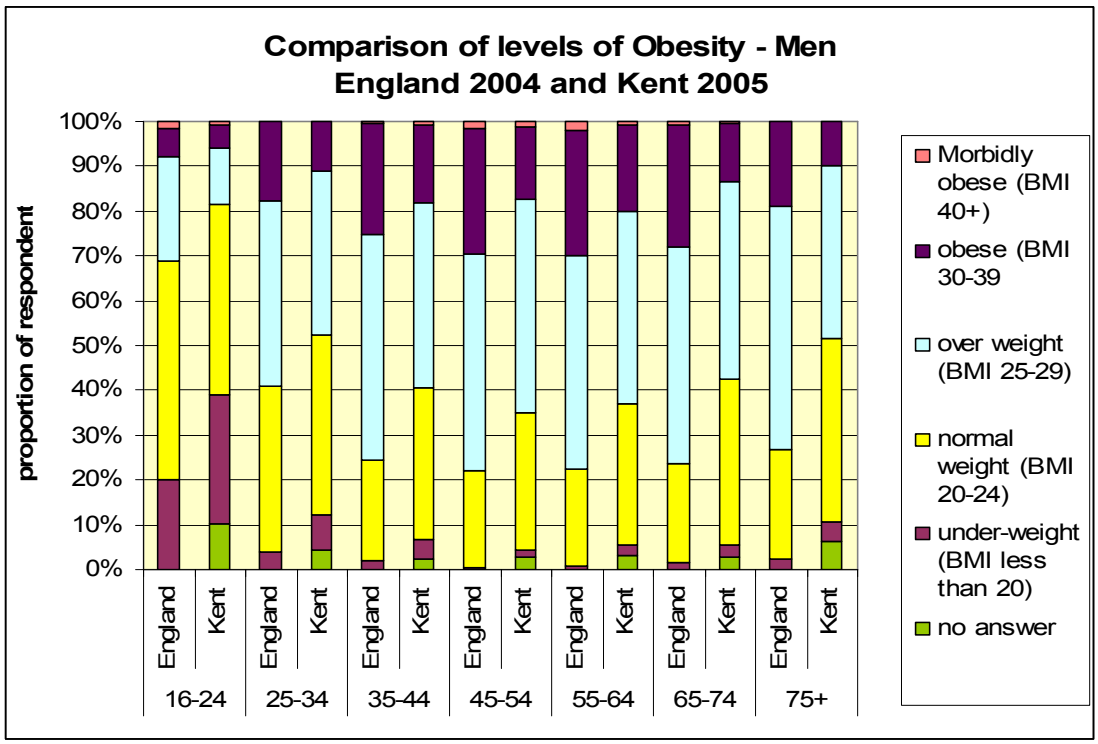
[10] i.e. is it actually possible there may have been a decease in the true level of obesity in the population because the confidence interval for men and for women separately is wider than for the population as a whole because the numbers are smaller

Appendix A). A comparison of Kent 2005 with England 2004 shows that on the whole people in Kent are less likely to be obese than in England as a whole, however the Kent data is self reported and the England data comes from direct measurement.

The comparison shows that :-

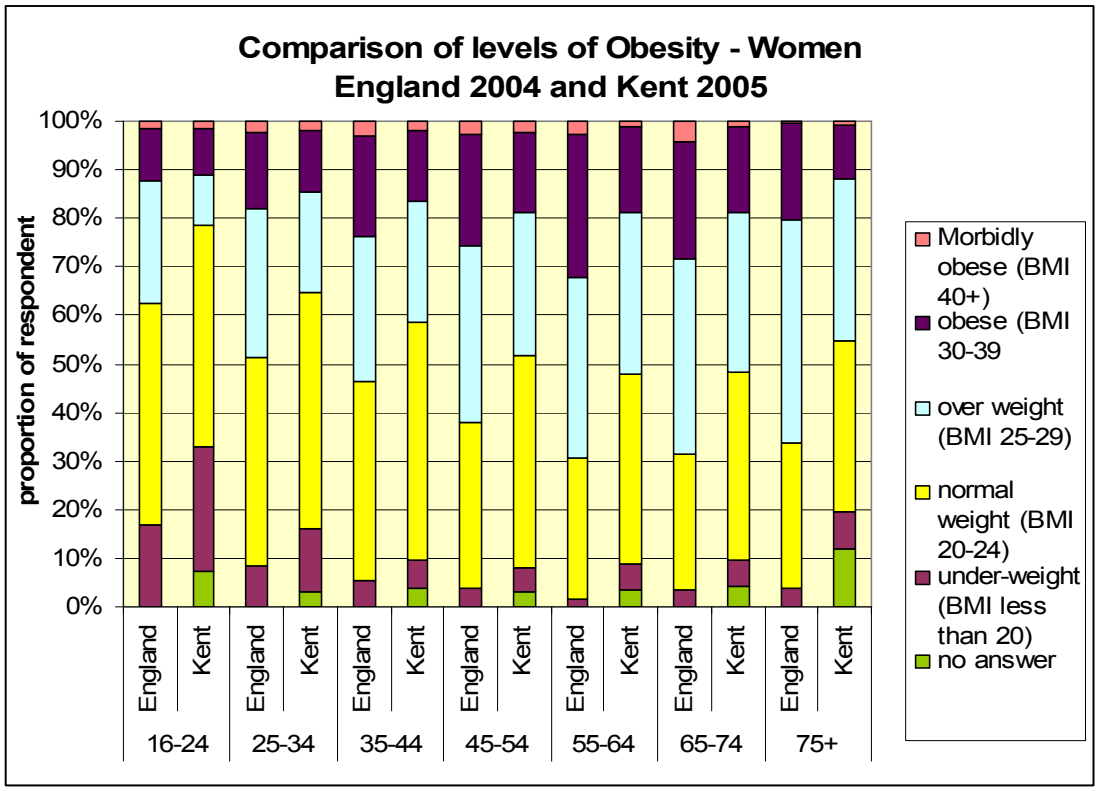
- for men at all ages, a greater proportion of Kent men were of normal weight, and that fewer were over-weight; the proportions virtually approximate at age 45-54 and then diverge again (Figure 2)
- for women at all ages – more Kent women were under-weight, less Kent women were of normal weight, more Kent women were over-weight, and fewer Kent women were obese than the national average (Figure 3)
- Kent men aged 55-64 are more likely to be obese than are Kent women of the same age; this reversal does not appear in the national figures until age 65-74; at 65-74 Kent women are more likely to be obese than Kent men

Figure 2



[11] It has to be remembered that the methodology in Kent is different from the Health Survey for England in which people are actually measured clinically

Figure 3



Obesity and Diet

49.3% of survey participants said they consumed at least 5 pieces of fruit and vegetables a day. There was quite a large difference between men and women with 41.8% of men compared to 53.5% of women who responded to this question consuming 5 pieces a day; the difference between men and women is significant (Table 4).

Both men and women were more likely to eat large quantities of vegetables than they were fruit. 36.4% of men and 41.6% of women said they ate 3 or more pieces of fruit a day; 50.8% of men and 57.7% of women said they ate 3 or more pieces of vegetables a day[12]. There is a correlation between eating fruit and eating vegetables ($R = 0.347$ and $p<0.001$) (see Appendix B).

[12] These figures do include those who did not answer the question

Table 4

Number of pieces of fruit and/or vegetables consumed in an average day

Fruit and/or veg a day	Men (n = 2427)		Women (n = 3307)		All (n = 5800)	
	No.	%	No.	%	No.	%
None	36	1.5%	35	1.1%	71	1.2%
1-2 pieces	401	16.5%	371	11.3%	789	13.6%
3-4 pieces	809	33.3%	982	29.7%	2212	31.2%
5-6	744	30.7%	1172	35.4%	1926	33.2%
7-9	254	7.6%	458	13.9%	716	12.3%
10 or more	86	3.5%	138	4.2%	224	3.8%
No answer	97	4.0%	151	4.6%	262	4.5%

Table 5

Which of the following best describes your thoughts of efforts towards eating a healthy diet by number of pieces of fruit and or veg a day

Which of the following best describes your thoughts of efforts towards eating a healthy diet	number of pieces of fruit and or veg a day: less than 5 a day (n=2658)	five or more a day (n=2859)	Total (n=5517)
no answer	1.4%	.4%	.9%
I am eating a healthy diet	40.8%	86.5%	64.5%
I eat a healthy diet once in a while, but not regularly	35.2%	9.1%	21.7%
I was eating a healthy diet in the past but do not now	3.2%	.6%	1.8%
I am thinking about trying to eat a healthy diet	10.1%	1.8%	5.8%
I am not thinking about trying to eat a healthy diet	4.4%	.5%	2.4%
don't know / not sure	4.8%	1.0%	2.8%

Asked which best described their thoughts of efforts towards a healthy diet, 64.6% of respondents claimed they were eating a healthy diet; another 21.3% said they

were eating a healthy diet once in a while. This left 13% who admitted they were not eating healthily. In addition 0.7% of the whole sample did not respond to the question.

86.5% of people eating five or more fruit and vegetables a day claimed they were eating a healthy diet, but 40.8% of people eating less than 5 pieces of fruit and vegetables a day also thought they were eating a healthy diet; this ranged from 11.3% of those eating no fruit and vegetables to 23.8% of those eating 2 pieces a day, 40.3% of those eating 3 a day and 53.0% of those eating 4 a day (Table 5).

Table 6

What makes eating a healthy diet difficult?	Agree	Somewhat agree
I do not have enough information about a healthy diet	7.8%	17.7%
I am not motivated to eat a healthy diet	17.2%	42.3%
I do not enjoy eating healthy foods	9.7%	25.4%
I do not have the skills to plan, shop for prepare or cook healthy foods	12.0%	17.7%
I do not have access to healthy foods	3.3%	7.2%
I am not able to buy healthy foods because they are expensive	10.3%	22.7%
I do not have the support of my partner to eat a healthy diet	5.3%	10.4%
I do not have the support of my children to eat a healthy diet	3.2%	5.4%
I do not have the support of my friends to eat a healthy diet	3.4%	8.1%
I do not have the time to prepare or eat healthy foods because of my job	14.9%	24.8%

35.1% of those not eating a healthy diet responded to questions about what makes a healthy diet difficult. This data shows that important factors for people whose BMI is in the obesity range include information, motivation, expense and preparation time (Table 6). These factors were also important for those whose BMI was not known.

Perceptions of Weight

On the whole people realized when they were overweight and described themselves fairly well (Table 8) :-

- 59.3% of all people in the survey regarded themselves as overweight to some extent.
- 45.5% of people with a BMI less than 30 also thought they were a little overweight and 4.4% very overweight
- 61.5% of people whose BMI was less than 20 thought they were about the right weight
- 28.7% who were normal weight (BMI 20-24) considered they were overweight
- 15.1% who were overweight (BMI 25-29) thought their weight was about right
- 58.8% of people with a BMI above 30 realised they were very overweight; 35.8% described themselves as 'a little overweight'

Table 8

Self Perception of Weight by BMI

Which of the following best describes you	BMI recoded for BMI 30 or over			Total (n=5800)
	no answer (n=262)	BMI less than 30 (n=4610)	BMI 30 or over (n=928)	
no answer	10.3%	0.4%	0.6%	0.9%
I am underweight	5.7%	4.0%	0.8%	3.5%
I am about the right weight	25.2%	43.8%	2.6%	36.4%
I am a little overweight	36.3%	45.4%	35.8%	43.6%
I am very overweight	13.4%	4.4%	58.8%	13.6%
I am not sure about my weight	9.2%	1.9%	1.4%	2.1%

73.2% of all respondents said they were trying to keep their weight down; only 4.2% altogether admitted to being very overweight; even amongst people with a BMI of 30 or more only 18.5% said they were overweight.

- 74.7% of respondents with a BMI over 30 said they were trying to keep their weight down
- 18.5% of respondents with a BMI over 30 just said 'I am very over weight'; this group was 29.5% of those who described themselves as being overweight
- 74% of respondents whose BMI was less than 30 also said they were trying to keep their weight down; 57% of these described themselves as 'a little overweight' (Table 9 and Appendix D Table 1).

Table 9

Which of the following best describes your current approach to weight management

	BMI not known (n=262)	BMI < 30 (n=4610)	BMI 30+ (n=928)	Total
no answer	17.2%	7.6%	2.0%	7.2%
I am trying to keep my weight down	55.3%	74.0%	74.7%	73.2%
I am trying to keep my weight up	7.3%	8.3%	1.4%	7.1%
I am very overweight	3.8%	1.4%	18.5%	4.2%
I am not sure about my weight	16.4%	8.8%	3.3%	8.2%

How do people try to manage there weight?

Three out of four respondents said they were trying to keep their weight down regardless of their BMI (Table 9).

- 64.2% of people whose BMI was less than 30 **and** who thought they were about the right weight said they were trying to keep their weight down (Appendix D, Table 1)

- 92.8% of people who perceived themselves to be a little overweight also said they were trying to keep their weight down
- 29.5% of obese people who perceived themselves as being very over-weight also responded that they were very over-weight when asked their approach to weight management (Appendix D, Table 2)

Respondents were asked – *'if you have a weight problem, which do you think would help most?'*

The most popular activity to help with keeping weight down was going to the gym (25.5%) followed by dietary advice (20.5%) and weight monitoring (19.1%). Other options around exercise included a personal trainer (14.9%) group exercise (13.8%) and fun runs (4.6%); options around diet included weight watchers or similar (13.7%) and meeting others with the same problem (5.9%). Support provided by professional was also a popular option including GP (9.8%) and practice nurse (8.2%) (Table 10).

Table 10

What would help most with your weight problem?

	Number giving this response (n = 5800)	%
Going to gym	1480	25.5%
Dietary advice	1189	20.5%
Weight monitoring	1109	19.1%
Personal trainer	865	14.9%
Group exercise	799	13.8%
Weight watchers or similar club	792	13.7%
GP one to one	569	9.8%
Practice nurse one to one	475	8.2%
Meeting others with the same problem	342	5.9%
Fun runs	264	4.6%
Practice group sessions	112	1.9%
Internet advice	98	1.7%
Other	986	17.0%

A long list of suggestions was obtained from people who ticked 'other' – mostly in relation to the need for exercise programme including walking, cycling, swimming, a gym with crèche facilities.

- *'common sense, if you do nothing you get over weight'*
- *Do not need anyone telling me to lose weight and exercise this is obvious'*
- *'gym membership gives you advice and programme to suit you'*
- *'trainer, swim daily'*
- *Would like a personal trainer but would be unable to afford it'*

The benefit of exercise was also mentioned, however from the responses it is generally clear that respondents have received mainly dietary advice in relation to obesity.

- *'weight loss programme at the gym. Exercise always works for me. Dietary changes on their own have no…'*

Some people mentioned work

- *Don't need advice, go walking, cycling, etc. know what to do, just need to find more time to do it, difficult when you work 7am-7pm'*

Exercise options highlighted by obese people included the need for child care

- *'Having child-care opportunities so I can go for a swim'*

Some people referred to their disabilities which make it difficult to exercise

- *'Being disabled I would like exercises to help me lose weight and to be mobile '*
- *'..but my shortage of breath and arthritis make exercising difficult '*
- *'personal trainer with specific experience in health problems'*
- *When I go on dialysis I am hoping they will allow and encourage more exercise e.g. swimming'*
- *'because I am arthritic gym or fun runs are out – gentle exercises to keep movement*
- *Because of my knee problem I am unable to exercise or walk as far as I used to'*

Motivation was an issue for some people

- *'I do not go anywhere foe advice on exercise'*
- *'I don't need advice I need motivation'*
- *'I know I could walk more than I do at present'*
- *'The advice is not the problem – its incentive and encouragement at home which is needed'*
- *'I would not'*
- *'I would not ask anyone for advice'*

21.1% of all respondents had already received advice on weight management. Many admitted to having problems sustaining the weight loss. Many had been to Weight Watchers, Slimming World and Rosemary Conley, some had used the dietician or practice nurse and had received GP advice. Dietary help for example banning cakes at work, provision of healthy food at work.

There is a lot of scepticism regarding the long term effectiveness of dietary advice particularly Weight Watchers, many finding it difficult to sustain the progress. A few people said they had discovered they had diabetes and had received advice accordingly.

- *'Went to weight watchers for 6 wks-stopped due to cost '*
- *'Weight watchers at work - it was great, no long meeting, just weigh in and a little chat. They no longer visit work, I lost 1 ½ stones'*
- *'Received advice from a dietician about eating a balanced diet'*
- *'Years ago-Dr advised diet, successful but not sustained'*

Comments from obese people included

- *Weight Watcher meetings and leaflets'*
- *'Weight watchers on line'*
- *'Eat less ,drink less ,exercise more ,its very simple in theory'*

Some were lucky enough to have an expert in the family, others had received useful advise in the workplace.

- *'Yes, my wife is a nutritionist '*
- *'My mother helps me'*

- *'Myself – qualified physiotherapist'*

Often medical advice was in relation to a health problem particularly cholesterol, blood pressure, diabetes or heart trouble, however there were others whose GP was not helpful

- *'With doctor's help ,lost 3 stone, but have now gained ,still trying by keeping to healthy diet'*
- *'advice from GP when high cholesterol diagnosed, this has been controlled for nearly three years'*
- *'I did mention to my GP about the weight gain but he did nothing about it"*

Physical Activity

The survey asked two questions in relation how much physical activity they undertook in a week. From the question which asked how many days a week they undertook moderate activity for thirty minutes at a time, it is estimated that 25.7% of all men and 23.7% of all women were undertaking moderate physical activity for 30 minutes on 5 or more days a week[13].

Further analysis using the second question, which asks for the number of days moderate activity is undertaken for one hour or longer, shows that 12.6% have said they undertake at least moderate activity for an hour or longer for 5 days or more a week, and another 13.2% have said they are moderately active for an hour or more on 3-4 days a week. Some of these respondents have replied to both question (a) and (b), however 244 people (4.2%) not respond to Question 45(a) but have answered Question 45(b) stating they are moderately active for an hour or longer 5 or more days a week. Thus it is estimated on this data that altogether 1660 respondents (28.7%) have actually said they are at least moderately active for 30 minutes or longer 5 days a week (Table 1). This number is not weighted for age or sex and, because of the way the question was worded, and the fact that some respondents have clearly not replied to Q45a when they were moderately active for an hour or longer, the findings are actually quite difficult to interpret.

[13] Palmer A; Jenkins L, Hastie C. 2006. First Report on Physical Activity and Obesity from the Kent 2005 Health and Lifestyle survey

The authors thus stand by the given baseline figure of 24.2% moderately physically active for 30 minutes 5 days a week.

Table 11

Self Reported Moderate Physical Activity for at least 30 minutes and for one hour or longer Kent 2005 – results not standardised

On how many days on average do you undertake at least moderate activity for 30 minutes	On how many days undertake at least moderate activity for an hour or longer					
	No answer	Less than one day / not at all	1-2 days a week	3-4 days a week	5 or more days a week	Total
No answer	250	13	220	219	244	946
	(4.3%)	(0.2%)	(3.8%)	(3.8%)	(4.2%)	(16.3%)
Less than one day a week / not at all	171	1134	38	19	9	1371
	(2.9%)	(19.6%)	(0.7%)	(0.3%)	(0.2%)	(23.6%)
1-2 days a week	186	316	477	43	7	1029
	(3.2%)	(5.4%)	(8.2%)	(0.7%)	(0.1%)	(17.7%)
3-4 days a week	247	165	364	278	15	1069
	(4.3%)	(2.8%)	(6.3%)	(4.8%)	(0.3%)	(18.4%)
5 or more days a week	352	166	210	204	453	1385
	(6.1%)	(2.9%)	(3.6%)	(3.5%)	(7.8%)	(23.9%)
Total	1206	1794	1309	763	728	5800
	(20.8%)	(30.9%)	(22.6%)	(13.2%)	(12.6%)	(100%)

The new analysis does show that 250 participants (4.3%) gave no answer to either question; 1318 participants (22.7%) were not active at all or less than one day a week (hereafter referred to as 'inactive') and 4232 participants (73.0%) were active at least one day for 30 minutes or longer.

There is no difference between men and women in their reporting of inactivity, except that women were more likely not to answer the question. Older people were significantly more likely not to answer the question, and were also less likely to be active (Table 12).

Table 12

Moderate Physical Activity by Age and Sex

Age / Sex	Moderately active at least one day a week (n=4232)		Inactive (n=1318)		No Answer (n=250)		Significance
	No.	%	No.	%	No.	%	
Sex M	1790	73.8%	574	23.7%	63	2.6%	Chi.sq.=121.874;
Sex F	2414	73.0%	728	22.0%	165	5.0%	4df; p<0.001
Aged 16-65	3131	77.7%	724	18.0%	173	4.3%	Chi.sq.=203.914;
Aged 65+	1058	62.8%	397	23.5%	231	13.7%	2df ; p<0.001
Males							
16-65	1216	76.3%	316	19.8%	61	3.8%	Chi.sq.=33.495;
65+	567	68.6%	183	22.2%	76	9.2%	2df; p<0.001
Females							
16-65	1915	78.6%	408	16.8%	112	4.6%	Chi.sq.=200.955;
65+	490	57.2%	214	25.0%	153	17.9%	2df; p<0.001

Obesity and Physical Activity

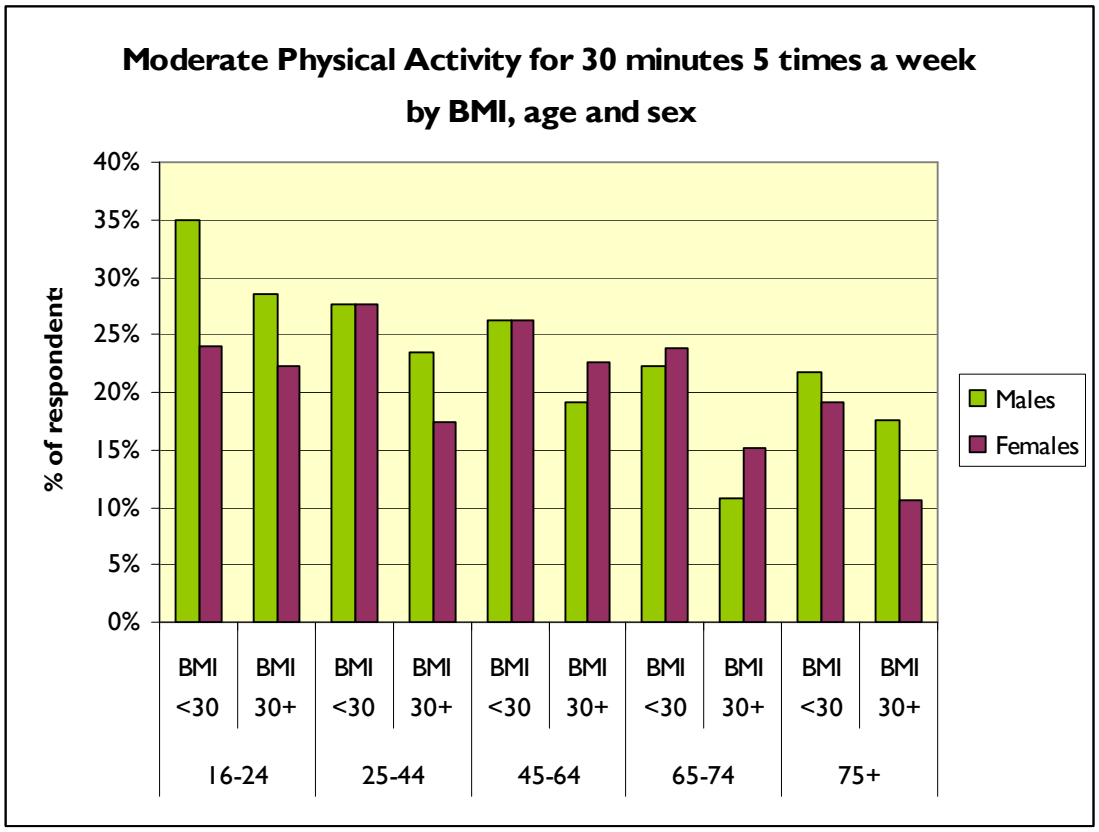
There was a difference how active people were according to the BMI of participants; these differences are statistically significant for both men and for women

- 18.6% of obese men with a BMI of 30 or more were active 5 days a week compared with 25.5% or men with a BMI less than 30
- 18.9% of obese women were active 5 days a weeks compared to 25.3% of women with a BMI less than 30

There is a marked age difference both in the amount of activity undertaken and between men and women (Figure 4). The findings may be influenced by under-representation of young men; in this sample young men were more active reducing with age. Young men (aged 16-24) were also more active than young women whether or not they were obese.

- After the age of 25 until age 65-74, for people with a BMI less than 30, women were as likely to be moderately active 5 times a week as were men
- Obese men (BMI 30+) were more likely to be moderately active than obese women up to the age of 25-44; from 45 – 74 obese women were more active than obese men

Figure 4



Poor Health and Disability among Obese People

22.8% of men and 20.3% of women in the survey reported fair or poor health.
44.1% of men and 39.7% of women reported a long term illness or disability.

As might be expected for both men and women in the sample the proportion who reported poorer health (Figure 5) and the presence of a disability (Figure 6) were increasing with age.

54.1% of respondents reported they were both in good or excellent health and had no long standing illness or disability. However, 24.2% although they reported good or excellent health also said they suffered from a long standing illness or disability; 17.4% reported **both** fair or poor health **and** long standing illness or disability and 4.3% said their general health was fair or poor but did not report any long standing illness or disability (Table 13) .

Figure 5

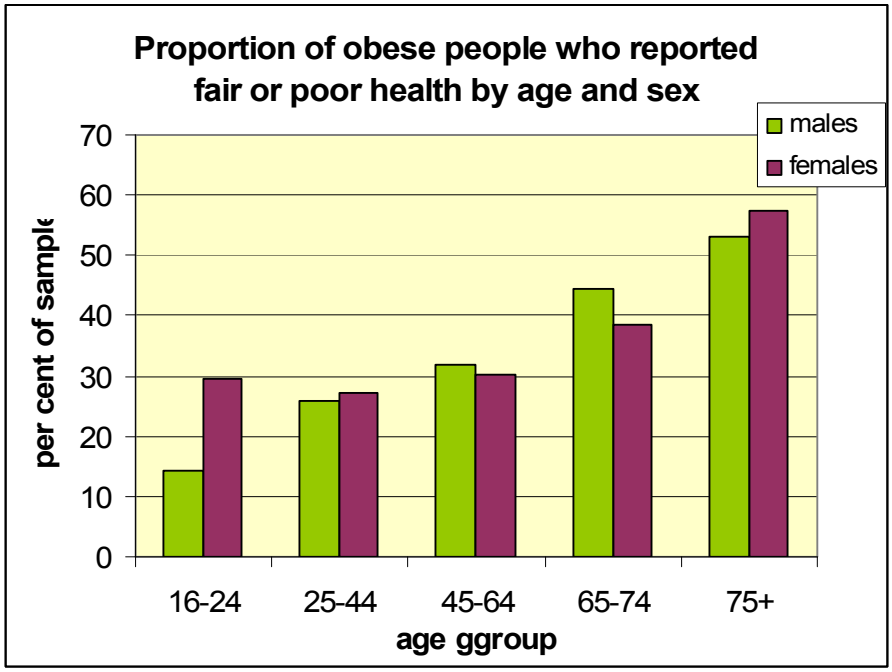


Figure 6

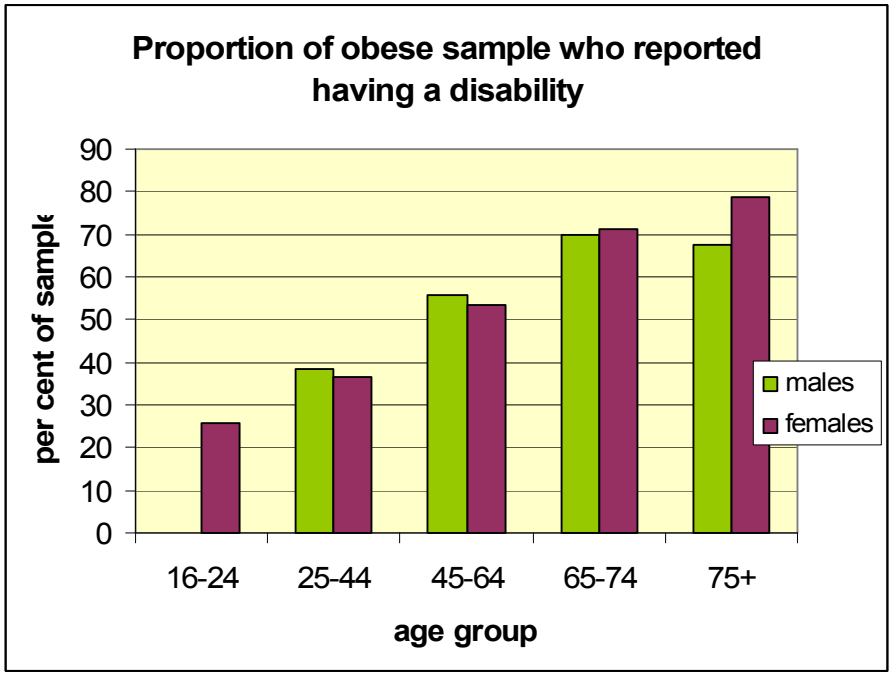


Table 13

Self reported general health by whether they reported long-standing illness or disability

	Long Standing illness or disability	No long standing illness or disability
General Health is good or	1374	3061

excellent	(24.3%)	(54.1%)
General Health is fair or poor	982 (17.4%)	241 (4.3%)

People whose BMI was less than 30 were more likely to report excellent or very good health and less likely to report a disability than people with a BMI or 30 or more; this is true for both men and women (Table 14).

Table 14

General Health and obesity

	BMI not known (n=248)	**BMI < 30 (n=4503)**	**BMI 30 + (n=907)**
Long standing illness + fair/ poor health	31.9%	14.3%	28.7%
Long standing illness + good / excellent health	21.8%	24.3%	24.9%
No long standing illness but fair / poor health	6.9%	3.2%	6.2%
No long standing illness + good / excellent health	39.5%	57.7%	40.2%

- Twice as many people with a BMI of 30 or more reported both long standing illness or disability and fair or poor health as those with a BMI less than 30.
- Very similar proportions reported good health but long standing illness or disability
- Small numbers but twice as many with a BMI of 30 or more reported fair/poor health without long standing illness or disability compared with people with BMI less than 30
- Half as many again and more than half the sample of people with a BMI less than 30 reported good to excellent health and no long standing illness or disability (Table14 , Appendix D)

There was very little difference between men and women and it is estimated that the presence of a long-standing illness or disability is more important – or – that obese people become disabled as a result of their weight problem.

- 29.4% of obese men and 27.0% of obese women reported they had a disability and their health was fair or poor
- 39.2% of men and 41.6% of obese women reported their health as good or excellent and no disability
- from the age of 45 and with increasing age there were more obese men and obese women people reporting they suffered long term illness or disability than not

People not reporting their height and/or weight (4.3% of the whole sample; 148 women and 87 men, 13 sex unknown) were more likely to be in fair/poor health (38.7%) and to report a disability (53.6%); these results indicates this group presents more problems than experienced by people admitting to obesity :-

- Reporting fair or poor health was higher for women in this group (39.2% of women to 33.3% of men) and prevalence of long standing illness or disability was higher for men (56.3%) than for women (50.0%)
- 31.5% of people whose BMI could not be calculated reported **both** fair/poor health **and** a disability. This compares to 28.5% of obese people with a BMI 30 or more and 14.2% of people with a BMI less than 30.

It is concluded that people not providing the survey with their weight have similar or more serious health problems to obese people. 29.5% of the women in this sub-set were aged 75 and over compared to 22.1% of the men; older men in this subset were more likely than the women to report poor health.

Ability to undertake moderate or vigorous activity

People were asked 'does your health limit you in your ability to undertake' vigorous and then moderate activities; 27.0% of the sample said they were limited a lot for vigorous activities, and 32.4% were limited a little. 8.3% of the sample said they were limited a lot in relation to moderate activities, and 17.6% were limited a little.

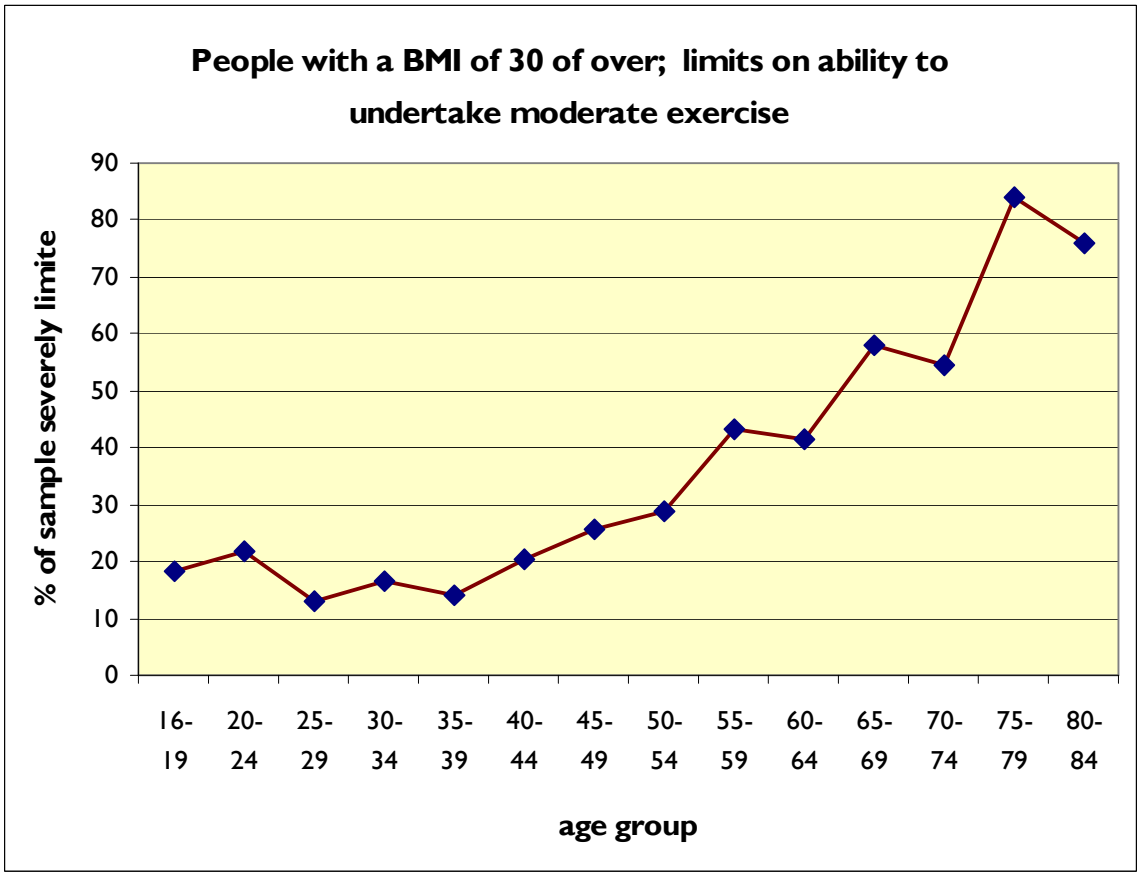
There was very little difference between men and women for vigorous activities (37.2% of men not limited compared to 36.0% of women); women were slightly more likely to be limited in moderate activities (70.7% of women not limited compared to 73.3% of men) (Table 15).

Health limits increased with age as might be expected; the proportion not limited reducing from 90.4% at 16-24, and 89.3% at 25-44 through 76.3% at 45-64 to 61.3% at 65-74 and 29.5% at 75 and over. When obesity is factored in then a higher proportion of women than of men have said they are limited a lot in both vigorous and moderate activities. This may be an age effect as there are more older women in the sample (Figure 7).

Table 15
Health Limits by BMI

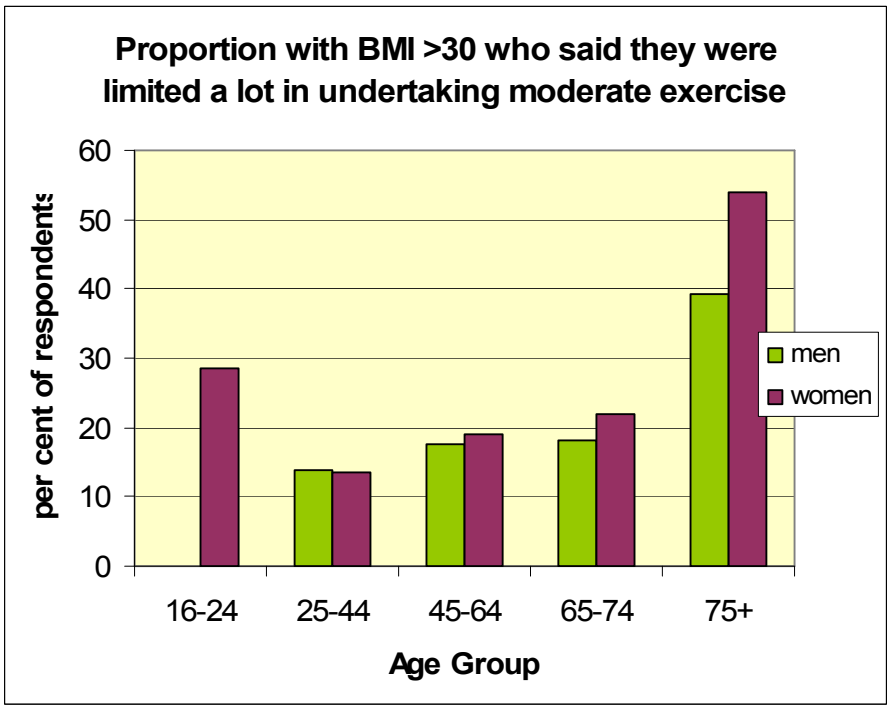
	Health limits vigorous activities			**Health limits moderate activities**		
	BMI not known (n=262)	**BMI < 30 (n=4610)**	**BMI 30 + (n=928)**	**BMI not known (n=262)**	**BMI < 30 (n=4610)**	**BMI 30 + (n=928)**
No answer	10.7%	4.3%	3.3%	9.9%	2.05	2.5%
Yes, limited a lot	35.5%	24.2%	38.4%	18.3%	7.1%	12.85
Yes, limited a little	23.7%	32.2%	35.65	19.5%	16.55	23.1%
No. not limited at all	30.2%	39.3%	22.7%	52.3%	74.4%	61.6%

Figure 7



People with a long standing illness or disability and who are obese are more limited in their ability to exercise. This increases with age in both men and women (Figures 6 and 8).

Figure 8



- 60.3% of people with a BMI of 30 or more and who say they have a long standing illness or disability are limited a lot in undertaking any vigorous activities compared to 12.4% with no disability
- 15.8% of people with a BMI less than 30 and who say they have a long standing illness or disability are limited in undertaking moderate activities compared to 1.8% who have no disability (Table 15)

When the sample is analysed only for sex and obesity there is a more pronounced difference between men and women, but altogether the obese sample is more likely to be able to undertake vigorous activities than is the sample which says they have a long-standing illness.

Table 16

People with long standing illness or disability, obesity and ability who are limited a lot in ability to undertake moderate activity

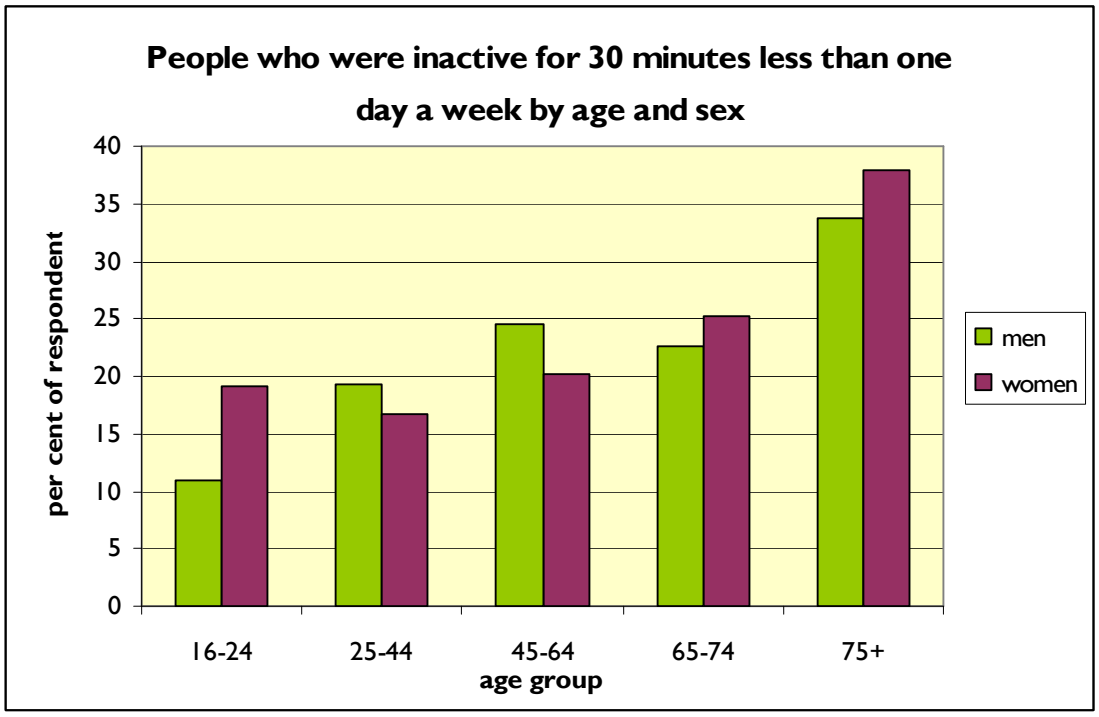
	BMI < 30	BMI 30+
No long standing illness / disability	1.8%	12.4%
Have long standing illness / disability	15.8%	60.3%

Those not providing a response on moderate activity were similar in most respects to those who were inactive, i.e. they said they were in fair or poor health, were more likely to say they suffered from long standing illness, were limited by their health in ability to undertake moderate activity and to climb stairs; however there were fewer men, they were older, and no more likely to be obese than active people. It may be concluded that many in this group of non-responders are frail and elderly women who are unable to be active.

Inactive people tended to be older, women, obese, and to have fair or poor health.

- The proportion inactive increases with age for both sexes (significant $p<0.001$), women are more likely to be inactive than men at 16-24 and after 64; young women are less likely to be active than women aged 45-64 (Figure 9 and Appendix E Table 3)
- 32.7% of obese people are inactive compared to 20.3% of people with a BMI les than 30
- Inactive people are more likely to be obese (23.0% of inactive people had a BMI of 30 and over compared to 13.9% active); this difference is highly significant ($p<0.001$) (Appendix E Table 3)
- Those participants who are inactive are more than twice as likely to have poor or fair health (38.0% compared to 15.9% of active people) again this is highly significant ($p<0.001$) (Appendix E Table 3)

Figure 9



There are real health problems for people who are inactive, the results below from the survey comparing people who are active less than one day a week or not at all with people who are active at least one day a week are all statistically significant $p<0.001$:-

- 42.4% of inactive people claimed their health limited a lot their ability to undertake vigorous activities compared to 21.2% of active people
- 18.8% of inactive people claimed their health limited a lot their ability to undertake moderate activities compared to 4.6% of active people

There was a serious limitation in the ability to undertake activities of daily living, for example :-

- 16.4% of inactive people were limited a lot lifting and carrying groceries compared to 4.0% of active people
- 22.5% of inactive people were limited a lot in bending, kneeling and stooping compared to 6.9% of active people
- 8.4% of inactive people were limited a lot bathing and dressing compared to 2.5% of active people

In addition inactive people were seriously limited in their ability to get around:-

- 26.9% of inactive people said their health limited a lot their ability to climb several flights of stairs, this compares to 8.1% of active people;
- 12.6% of inactive people were limited a lot in climbing just one flight of stairs compared to 2.6% of active people
- 30.1% of inactive people were limited a lot walking more than one mile compared to 8% of active people
- 23.0% of inactive people were limited a lot in walking only half a mile compared to 4.7% of active people
- 12.4% of inactive people were limited a lot walking more than 100 yards compared to 2.2% of active people

Comments included

- *'I have a problem in losing weight because I got breathing problem every 50 yards I go to use a …*
- *'I have physio to improve the strength on my right side I am in no position to do exercise'*
- *"If I could exercise but I can't as it hurts my back and I get short of breath'*
- *'If my knees were sorted out I could get back to exercise'*
- *'I am disabled so exercise is out'*

Table 16

Chronic Disease prevalence and reporting long standing illness.

Do you have any of the following :-	**Do you have a long standing illness, disability or infirmity.**	
	Yes	**No**
Asthma	16.2%	5.7%
Arthritis	36.4%	8.2%
Heart Disease	12.9%	1.4%
Bronchitis	4.7%	1.3%
Diabetes	11.7%	1.1%
Parkinson's	0.9%	0.2%
Stroke	3.2%	2.1%

People with Chronic Disease

Overall in this survey 41% of respondents reported they had long standing illness, disability or infirmity. Interestingly for all chronic conditions asked in the survey there are people who said 'no' to the question on long standing illness (Table 16). Obese people (with a BMI of 30 of more) were more likely to suffer from chronic diseases, in particular asthma, arthritis, heart disease and diabetes; these are all conditions likely to affect ability to exercise.

People who did not respond to questions relating to weight had a high incidence of all these chronic problems; it seems that those who were most likely to be suffering long term illness were unable or unwilling to provide these details. In all case people with a BMI less than 30 were significantly less likely to be suffering from chronic diseases; however does the disease or the weight problem come first? It may be possible to analyse this by looking at cohort effects.

Table 16

Chronic Disease prevalence by BMI

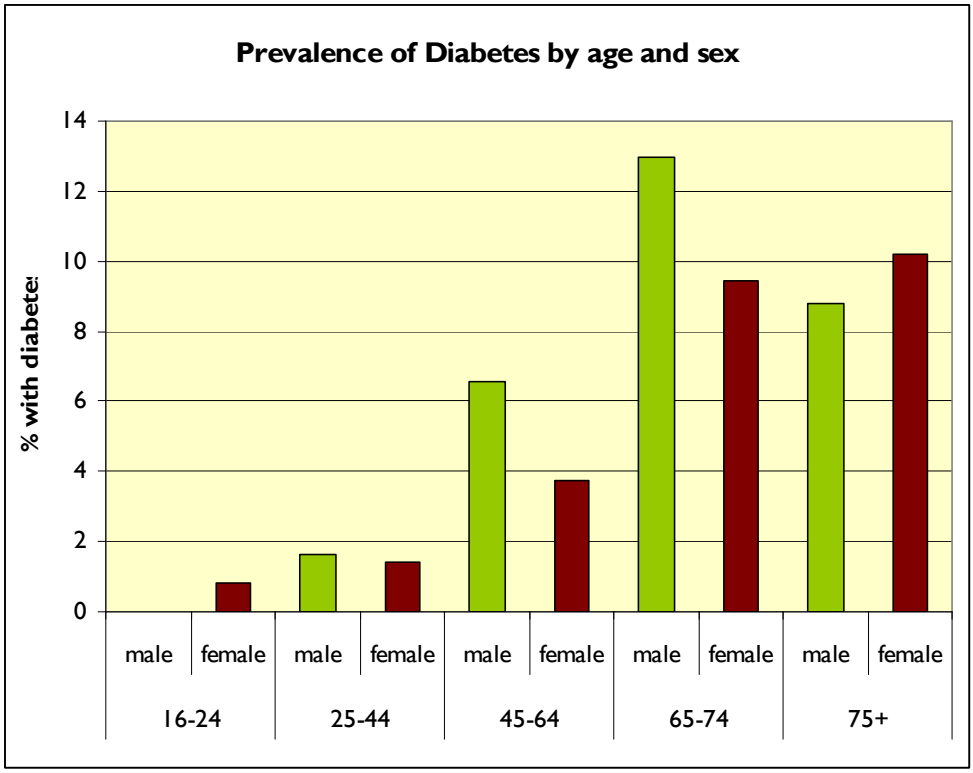
	BMI unknown (n=262)	BMI is less than 30 (n=4610)	BMI is 30 or more (n=928)	Significance
Asthma	13.7%	9.2%	12.8%	Chi sq=15.613; 2df; p<0.001
Arthritis	23.7%	18.0%	28.6%	Chi sq=56.232; 2df; p<0.001
Heart disease	8.0%	5.9%	7.8%	Chi sq=6.053; 2df; p=0.048
Bronchitis	6.1%	1.9%	5.7%	Chi sq=53.51; 2df; p<0.001
Diabetes	9.2%	4.0%	12.3%	Chi sq=109.054; 2df; p<0.001
Parkinson's disease	2.3%	0.4%	0.2%	Chi sq=20.359; 1df; p<0.001
Stroke	7.6%	2.4%	2.9%	Chi sq=46.123; 4df; p<0.001

Diabetes and arthritis are taken as examples for further analysis. 5% of the sample population said they had diabetes and 19.9% said they had arthritis. The incidence of

both diseases was higher than expected in the obese population (BMI 30+); 12.3% of obese people suffered diabetes compared to 4.0% of people with a BMI less than 30; 28.6% of obese people suffered arthritis compared to 18.0% with a BMI less than 30.

Diabetes

Figure 10



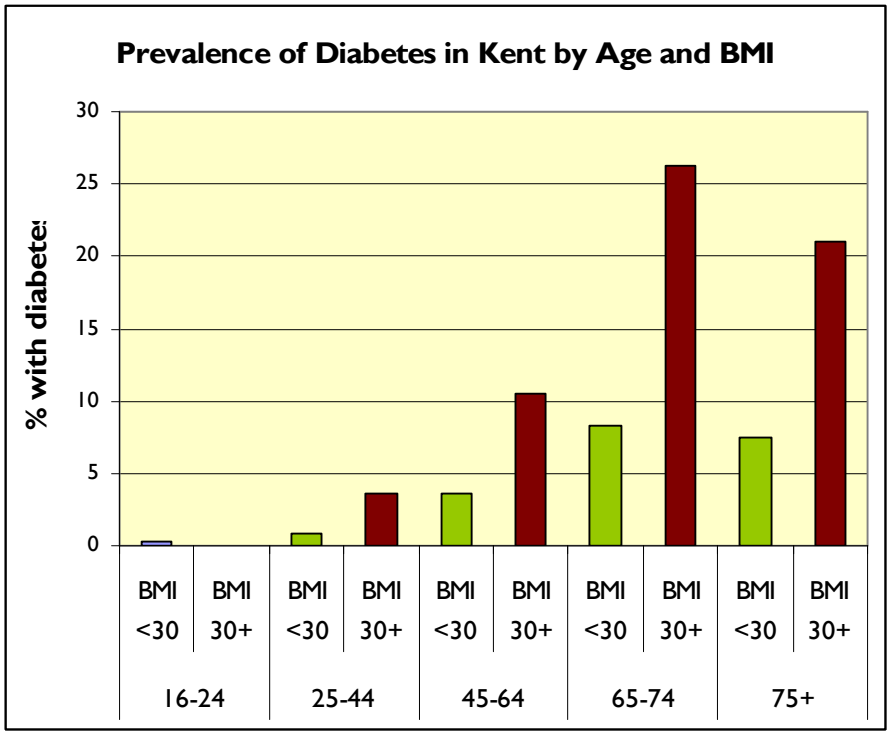
There were 167 men (6.9%) and 147 (4.4%) women with diabetes in the survey. There is a difference in the prevalence of diabetes between men and women; the prevalence in this sample increases with age, and more steeply in men than in women up to the age of 74 after which diabetes is slightly more common in women (Figure 10).

Using the survey findings ***the estimated number of people in Kent with diabetes for 2005 is between 42,735 and 53,304*** and the prevalence of diabetes is

- 4.87% +/- 0.76% for men
- 4.07% +/- 0.65% for women

- 4.42% +/- 0.49% for all people

Figure 11



At all ages men were more likely to have reported diabetes than were women.

- At 45-64 men were 1.75 times more likely to have diabetes than women and at 65-74 1.38 times. After 75 the prevalence is higher amongst women than men who are 0.86 times as likely as men to have diabetes
- The prevalence in men fell after 75 to 8.8%, possibly because obese and diabetic men have a higher mortality, whereas in women the prevalence continued to rise to 10.2%

Diabetes increases in prevalence with increasing age; this increase is greater amongst the obese population rising to 26.3% between the ages of 65 and 79 (Figure 11).

- In the obese population men had a higher prevalence of diabetes rising to 32% of obese men (BMI 30+) in the age group 65-74. This is much higher than amongst women where 20.9% of obese women aged 65-74 reported diabetes

After the age of 45 the odds ratio for developing diabetes for an obese woman was as high or higher than for an obese man (Table 17); the odds for a young obese man seem particularly high at 6.8 times the risk for a non-obese young man.

Table 17

Odds Ratio[14] for developing diabetes by age, sex and BMI 30+.

	males	females
25-44	6.84	2.92
45-64	2.77	3.09
65-74	3.30	3.19
75+	1.91	3.56

People with diabetes were more likely to report they were limited in vigorous activities than non diabetics and more likely to report limitation if they were obese (45.9% of diabetic and: 23.3% non-diabetic people with BMI less than 30 and 62.3% of diabetic and 35.0% of non-diabetic people with BMI 30 or more). This is true also for moderate activities when 21.9% of obese diabetics reported they were severely limited compared to 11.5% of non-diabetic obese people.

Arthritis

The prevalence of arthritis in the sample population is higher than diabetes; also the presence of arthritis increases steadily through the age groups in both obese and non-obese people although at every age it is more prevalent amongst obese people.

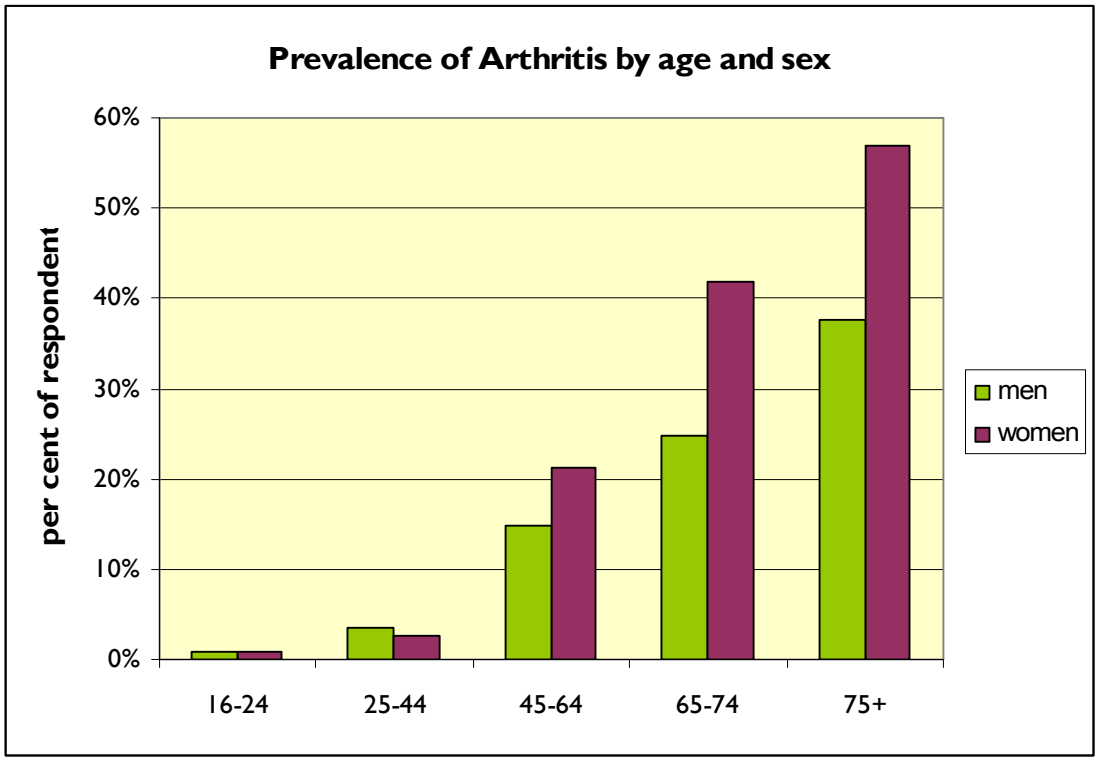
19.75% of the sample population said they suffered from arthritis; this increased from 2.9% aged 25-44 through 18.4% aged 45-64 and 33.1% aged 65-74 to 48.0% of respondents aged 75 and over. Arthritis is reported more commonly amongst female respondents; from the age of 45-64 women were 1.4 times more likely to report arthritis, from 65-74 they were 1.7 times more likely, after 75 women were 1.7 times more likely to report arthritis and the prevalence at this age in the sample population was 38% for men and 57% for women (Figure 12).

[14] The odds ratio is calculated by dividing the odds in the treated or exposed group (BMI 30+) by the odds in the control group (BMI < 30) (Bandolier http://www.jr2.ox.ac.uk/bandolier/band25/b25-6.html)

Using the survey findings ***the estimated number of people in Kent with arthritis for 2005 is between161,491 and 178,517*** and the prevalence of arthritis is

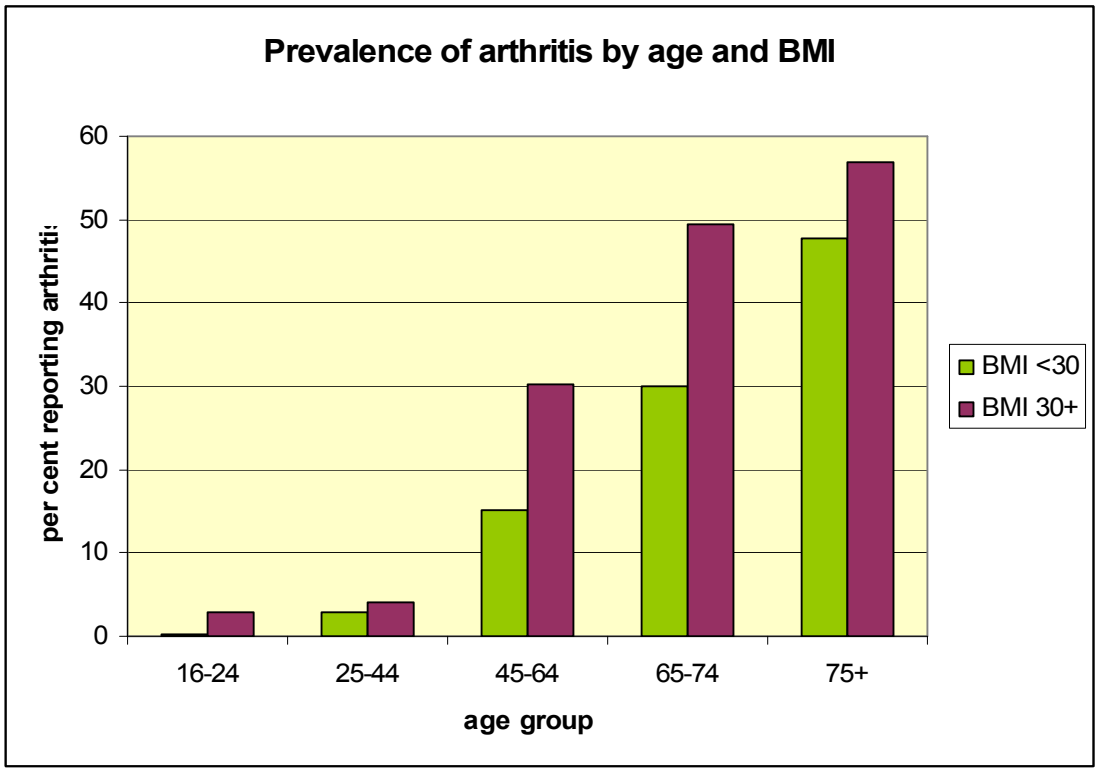
- 11.95% +/- 1.11% for men
- 19.36% +/- 1.12% for women
- 14.57% +/- 0.81% for all people

Figure 12



The increase in the prevalence of arthritis occurs at an earlier age in obese people than in those with a BMI less than 30 (Figure 13). At 45-64 the odds for having arthritis are 2:1, at 65-74 1.6:1 and from the age of 75 1.2:1.

Figure 14



The effect of obesity on the prevalence of arthritis appears to be the same for men as for women (Table 6). Men aged 45-64 had a slightly higher odds ratio[15]; this then fell with increasing age and men became slightly less likely to experience arthritis.

Table 18

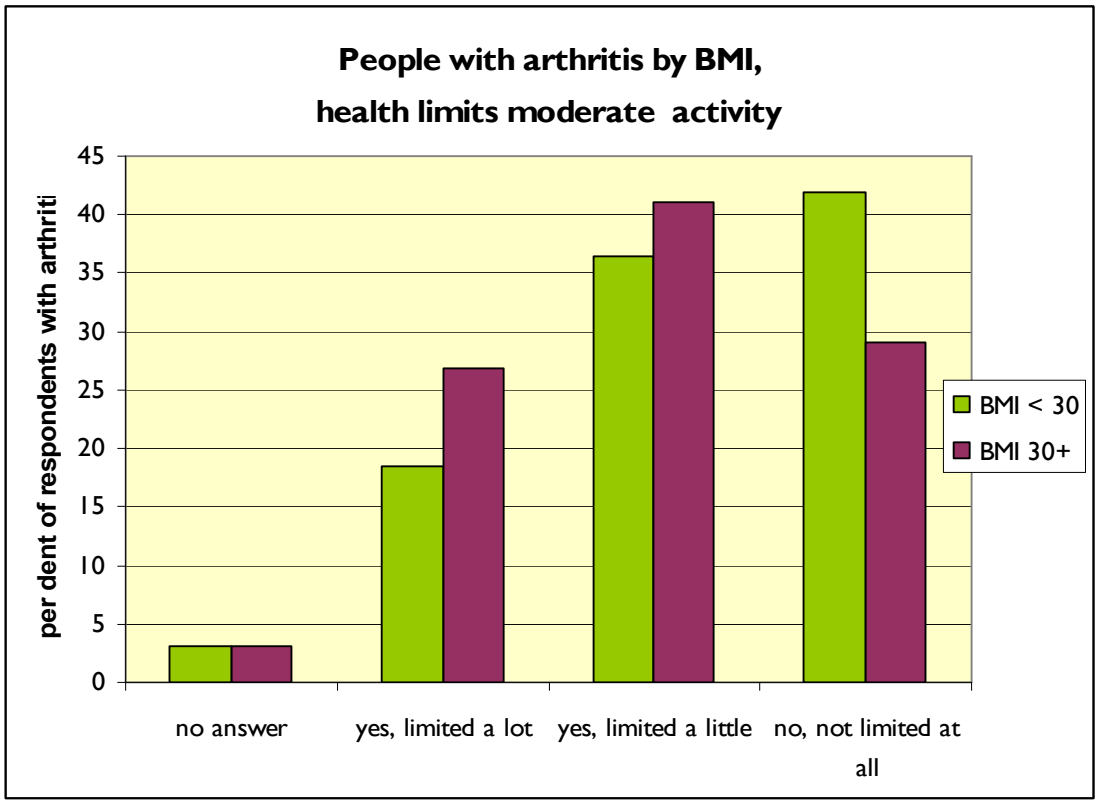
Odds Ratio for Arthritis BMI 30+ to BMI less than 30

	males	females
45-64	2.12	1.93
65-74	1.49	1.59
75+	1.15	1.18

There is some evidence from the data that people with arthritis are limited in the amount of physical activity they are able to undertake if their BMI is above 30 (Figure 15).

[15] Odds Ratio is the proportion of people reporting arthritis in the obese population / proportion in the non-obese population

Figure 15


People with arthritis by BMI,
health limits moderate activity
per dent of respondents with arthriti
45
40
35
30
25
20
15
10
5
0
no answer
yes, limited a lot
yes, limited a little
no, not limited at all
BMI < 30
BMI 30+

Appendix A
Prevalence of Obesity – England 2004 and Kent 2005

	16-24		25-34		35-44		45-54		55-64		65-74		75+	
	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005
MEN	**n=255**	**n=118**	**n=388**	**n=162**	**n=478**	**n=325**	**n=390**	**n=413**	**n=424**	**n=575**	**n=319**	**n=485**	**n=190**	**n=341**
no answer	0.0	10.2	0.0	4.3	0.0	2.5	0.0	2.7		3.3		2.9		6.2
under-weight (<20)	20.2	28.8	4.1	8.0	2.1	4.3	0.5	1.5	0.7	2.4	1.6	2.5	2.5	4.4
normal (20-24.9)	48.8	42.4	37.0	40.1	22.4	33.8	21.7	30.8	21.7	31.5	22.2	37.3	24.1	41.1
over-weight (25-29.9)	23.1	12.7	41.0	36.4	50.3	41.2	48.2	47.7	47.5	42.6	48.4	43.9	54.4	38.4
obese (30-39.9)	6.5	5.1	17.9	11.1	24.8	17.2	28.0	16.5	28.1	19.5	27.1	13.0	19.0	10.0
morbidly obese (40+)	1.4	0.8	0.0	0.0	0.4	0.9	1.6	1.0	2.0	0.7	0.7	0.4	0.0	0.0
WOMEN	**n=294**	**n=245**	**n=453**	**n=375**	**n=649**	**n=537**	**n=527**	**n=592**	**n=538**	**n=686**	**n=393**	**n=456**	**n=281**	**n=401**
no answer		7.3		2.9		3.7		3.2		3.4		4.2		11.7
under-weight (<20)	16.7	25.7	8.6	13.1	5.5	6.0	3.8	4.7	1.7	5.5	3.3	5.5	3.9	8.0
normal (20-24.9)	45.9	45.3	42.6	48.8	40.8	48.8	34.0	43.8	29.0	38.9	28.2	38.4	29.9	34.9
over-weight (25-29.9)	25.2	10.6	30.9	20.5	30.0	25.0	36.4	29.7	37.2	33.4	40.2	33.1	45.9	33.7
obese (30-39.9)	10.5	9.4	15.5	12.5	20.7	14.7	23.1	16.4	29.6	17.5	24.1	17.5	19.9	11.0
morbidly obese (40+)	1.7	1.6	2.4	2.1	2.9	1.9	2.7	2.2	2.6	1.3	4.1	1.3	0.4	0.7

assuming the unweighted base is the raw sampling figures (England)

Source: Health Survey of England 2004; Kent Survey 2005

Appendix B

Table 1
Number of pieces of Fruit and number of pieces of vegetable consumed in an average day

	Men (n = 2427)		Women (n = 3307)		All (n = 5800)	
	No.	%	**No.**	%	**No.**	%
Fruit a day						
None	230	9.5%	186	5.9%	433	7.5%
1-2 pieces	1307	53.9%	1584	47.9%	2927	50.5%
3-4 pieces	724	29.9%	1203	36.3%	1943	33.5%
5 or more	158	6.5%	310	9.4%	471	8.1%
Veg a day						
None	46	1.9	62	1.9%	109	1.9%
1-2 pieces	1138	46.9%	1321	40.0%	2470	42.9%
3-4 pieces	1120	46.1%	1712	51.7%	2861	49.5%
5 or more	115	4.7%	200	6.0%	316	5.4%

Appendix C
Table 1

Which of the following best describes you by Body Mass Index

			Body Mass Index - category						
			no answer	under-weight (<20)	normal (20-24.9)	over-weight (25-29.9)	obese (30-34.9)	grossly obese (35+)	Total
Which of the following best describes you	no answer	Count	27	5	7	5	6	0	50
		% within Body Mass Index - category	10.3%	1.3%	.3%	.3%	.9%	.0%	.9%
	I am underweight	Count	15	110	66	7	3	4	205
		% within Body Mass Index - category	5.7%	28.8%	2.9%	.4%	.4%	1.6%	3.5%
	I am about the right weight	Count	66	235	1490	294	18	6	2109
		% within Body Mass Index - category	25.2%	61.5%	65.4%	15.1%	2.7%	2.3%	36.4%
	I am a little overweight	Count	95	19	655	1425	309	23	2526
		% within Body Mass Index - category	36.3%	5.0%	28.7%	73.1%	46.1%	8.9%	43.6%
	I am very overweight	Count	35	1	7	197	325	221	786
		% within Body Mass Index - category	13.4%	.3%	.3%	10.1%	48.4%	86.0%	13.6%
	I am not sure about my weight	Count	24	12	54	21	10	3	124
		% within Body Mass Index - category	9.2%	3.1%	2.4%	1.1%	1.5%	1.2%	2.1%
Total		Count	262	382	2279	1949	671	257	5800
		% within Body Mass Index - category	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Appendix D

Table 1
Which of the following best describes you * Which of the following best describes your current approach to weight management - BMI less than 30

Which of the following best describes you	Which of the following best describes your current approach to weight management					Total
	no answer	I am trying to keep my weight down	I am trying to keep my weight up	I am very overweight	I am not sure about my weight	
no answer	3	8	4	1	1	17
	17.6%	47.1%	23.5%	5.9%	5.9%	100.0%
I am underweight	14	14	123	2	30	183
	7.7%	7.7%	67.2%	1.1%	16.4%	100.0%
I am about the right weight	294	1259	225	7	234	2019
	14.6%	62.4%	11.1%	.3%	11.6%	100.0%
I am a little overweight	38	1948	15	9	89	2099
	1.8%	92.8%	.7%	.4%	4.2%	100.0%
I am very overweight	2	153	2	45	3	205
	1.0%	74.6%	1.0%	22.0%	1.5%	100.0%
I am not sure about my weight	0	28	12	0	47	87
	.0%	32.2%	13.8%	.0%	54.0%	100.0%
Total	351	3410	381	64	404	4610
	7.6%	74.0%	8.3%	1.4%	8.8%	100.0%

Table 2

Which of the following best describes you by Which of the following best describes your current approach to weight management - BMI 30 or over

Which of the following best describes you	Which of the following best describes your current approach to weight management					Total
	no answer	I am trying to keep my weight down	I am trying to keep my weight up	I am very overweight	I am not sure about my weight	
no answer	2	2	1	1	0	6
	33.3%	33.3%	16.7%	16.7%	.0%	100.0%
I am underweight	0	5	1	0	1	7
	.0%	71.4%	14.3%	.0%	14.3%	100.0%
I am about the right weight	1	17	4	1	1	24
	4.2%	70.8%	16.7%	4.2%	4.2%	100.0%
I am a little overweight	7	299	5	8	13	332
	2.1%	90.1%	1.5%	2.4%	3.9%	100.0%
I am very overweight	9	365	2	161	9	546
	1.6%	66.8%	.4%	29.5%	1.6%	100.0%
I am not sure about my weight	0	5	0	1	7	13
	.0%	38.5%	.0%	7.7%	53.8%	100.0%
Total	19	693	13	172	31	928
	2.0%	74.7%	1.4%	18.5%	3.3%	100.0%

Appendix E

Table 1
Self Perception of General Health by BMI

In general would you say that your health is	BMI recoded for BMI 30 or over			Total
	no answer	BMI less than 30	BMI 30 or over	
no answer	10	73	13	96
	3.8%	1.6%	1.4%	1.7%
excellent	22	554	37	613
	8.4%	12.0%	4.0%	10.6%
very good	52	1627	216	1895
	19.8%	35.3%	23.3%	32.7%
good	80	1538	344	1962
	30.5%	33.4%	37.1%	33.8%
fair	72	681	232	985
	27.5%	14.8%	25.0%	17.0%
poor	26	137	86	249
	9.9%	3.0%	9.3%	4.3%
Total	262	4610	928	5800
	100.0%	100.0%	100.0%	100.0%

Table 2
Do you have a long standing illness, disability or infirmity that has troubled you over a period of time by BMI

Do you have a long standing illness, disability or infirmity that has troubled you over a period of time	no answer	BMI less than 30	BMI 30 or over	Total
yes	136	1750	491	2377
	54.2%	38.7%	53.8%	41.8%
no	115	2770	422	3307
	45.8%	61.3%	46.2%	58.2%
Total	251	4520	913	5684
	100.0%	100.0%	100.0%	100.0%

Table 3

Moderate Physical Activity by Health Indicator

Health Indicator	Moderately active at least one day a week		Not Active		No Answer		Significance
	No.	**%**	**No.**	**%**	**No.**	**%**	
General health							
Good / excellent	3510	78.5%	695	15.5%	265	5.9%	Chi sq.=305.005;
Fair / poor	662	53.6%	421	34.1%	151	12.2%	2df; p<0.001
Long standing illness / disability							
Yes	1542	64.9%	599	25.2%	236	9.9%	Chi sq.=141.080;
No	2613	79.0%	508	15.4%	186	5.6%	2df; p<0.001
Health limits moderate activities							
Not at all / no answer	3393	79.3%	660	15.4%	228	5.3%	Chi sq.=333.242; 2df; p<0.001
A lot / a little	839	55.2%	474	31.2%	206	7.5%	
Health limits climbing several flights of stairs							
Not at all / no answer	3018	80.7%	522	14.0%	201	5.4%	Chi sq.=317.419; 2df; p<0.001
A lot / a little	1214	59.0%	612	29.7%	233	11.3%	
Health limits climbing one flight of stairs							
Not at all / no answer	3716	78.3%	750	15.8%	280	5.9%	Chi sq.=376.963; 2df; p<0.001
A lot / a little	516	49.0%	384	36.4%	154	14.6%	
Health limits walking half a mile							
Not at all / no answer	3686	79.1%	715	15.3%	259	5.6%	Chi sq.=454.375; 2df; p<0.001
A lot / a little	546	47.9%	419	36.8%	175	15.4%	
BMI							
<30	3506	76.1%	803	17.4%	301	6.5%	Chi.sq.=200.019;
30+	589	63.5%	271	29.2%	68	7.3%%	4df; p<0.001

Table 4
Does your health limit you - Vigorous activities by BMI

Does your health limit you - Vigorous activities	no answer	BMI less than 30	BMI 30 or over	Total
no answer	28	197	31	256
	10.7%	4.3%	3.3%	4.4%
yes, limited a lot	93	1115	356	1564
	35.5%	24.2%	38.4%	27.0%
yes, limited a little	62	1486	330	1878
	23.7%	32.2%	35.6%	32.4%
no, not limited at all	79	1812	211	2102
	30.2%	39.3%	22.7%	36.2%
Total	262	4610	928	5800
	100.0%	100.0%	100.0%	100.0%

Appendix F
Table 1

Presence of Diabetes by BMI

Crosstab

Do you have any of the following health problems or diseases - Diabetes	no answer	BMI less than 30	BMI 30 or over	Total
yes	24	183	114	321
	9.2%	4.0%	12.3%	5.5%
no	238	4427	814	5479
	90.8%	96.0%	87.7%	94.5%
Total	262	4610	928	5800
	100.0%	100.0%	100.0%	100.0%

Table 2

Prevalence of diabetes by BMI - men

Do you have any of the following health problems or diseases - Diabetes	Body Mass Index - category						Total
	no answer	under-weight (<20)	normal (20-24.9)	over-weight (25-29.9)	obese (30-34.9)	grossly obese (35+)	
yes	9	2	34	67	42	13	167
	9.9%	1.8%	4.0%	6.7%	14.3%	16.7%	6.9%
no	82	109	821	932	251	65	2260
	90.1%	98.2%	96.0%	93.3%	85.7%	83.3%	93.1%
Total	91	111	855	999	293	78	2427
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3

Prevalence of diabetes by BMI - women

Do you have any of the following health problems or diseases - Diabetes	Body Mass Index - category						Total
	no answer	under-weight (<20)	normal (20-24.9)	over-weight (25-29.9)	obese (30-34.9)	grossly obese (35+)	
yes	13	3	24	53	31	23	147
	8.2%	1.1%	1.7%	5.7%	8.4%	13.1%	4.4%
no	145	267	1380	878	338	152	3160
	91.8%	98.9%	98.3%	94.3%	91.6%	86.9%	95.6%
Total	158	270	1404	931	369	175	3307
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure I

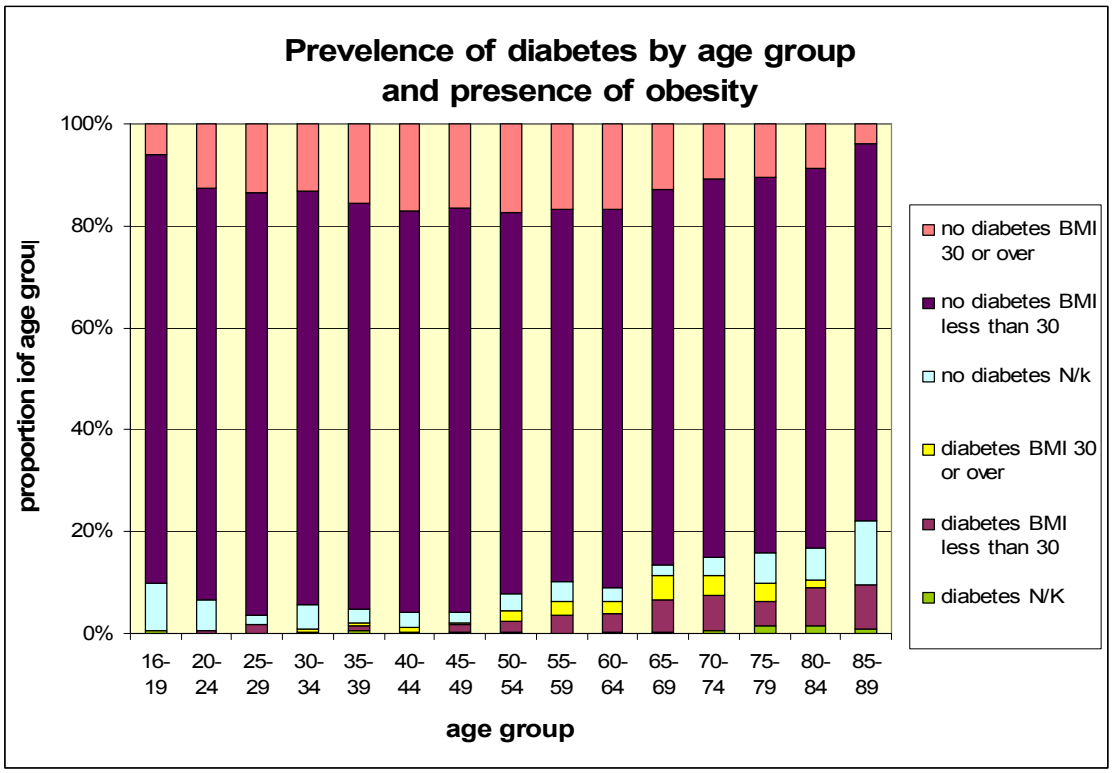

Prevelence of diabetes by age group and presence of obesity
100%
80%
60%
40%
20%
0%
proportion iof age grou
16-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85-89
age group
no diabetes BMI 30 or over
no diabetes BMI less than 30
no diabetes N/k
diabetes BMI 30 or over
diabetes BMI less than 30
diabetes N/K

Table 4

Prevalence of Diabetes – self reported, either Type I or Type II, England and Wales and Kent

	16-24		25-34		35-44		45-54		55-64		65-74		75+	
	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005	England 2004	Kent 2005
men														
base	n=1047	n=118	n=1274	n=162	n=1416	n=325	n=1185	n=413	n=1043	n=575	n=731	n=485	n=507	n=341
% with diabetes	0.4	0	0.3	1.23	2.8	1.85	3.6	3.87	8.1	8.52	11.9	12.99	10	8.80
women														
base	n=1034	n=245	n=1285	n=375	n=1440	n=537	n=1200	n=592	n=1074	n=686	n=816	n=456	n=785	n=401
% with diabetes	0.9	0.82	0.9	1.33	1.5	1.49	2.6	2.87	4.7	4.52	8.4	9.43	8.9	10.22

assuming the unweighted base is the raw sampling figures (England)

Source: Health Survey of England 2004; Kent Survey 2005

Appendix G

Figure 1