



A Life Course Approach to Tackling Obesity

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About this Report

This policy brief is the third and final publication of a series focusing on policies addressing obesity in the UK.

Obesity and Public Health Policy: Lessons from Tobacco Control (April 2008) reviews those strategies that have been effective against tobacco use and explores the scope for applying them to combat obesity.

Obesity in the UK: A Review and Comparative Analysis of Policies within the Devolved Regions (February 2008) analyses and compares policies to tackle obesity at the devolved level in the UK.

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Background

Obesity in England is a major public health problem among both adults and children which shows no signs of abating.¹ The Foresight report published by the UK Government in October 2007 predicts that by 2050, if current trends persist, 60 percent of men, 50 percent of women and a quarter of children will be obese².

Obesity has many consequences. The health effects of obesity include: type II diabetes; hypertension; osteoarthritis, and several types of cancer.

Obesity can also have effects on mental health and psychosocial consequences such as depression, discrimination and bias. The economic consequences of obesity can include reduced productivity and increased absenteeism in the workplace.

A Life Course Approach

The causes and drivers of obesity are complex. At the population level, an abundance of energy dense foods and sedentary lifestyles are widely accepted to be the primary drivers. At a sub-population level, the drivers of obesity are more complex, and vary by ethnicity, socioeconomic group and age. Indeed, age is *the* factor most strongly associated with being overweight in all population groups.

In January 2008, the UK Government launched an Obesity Strategy focusing on promoting healthy food and children's health, physical activity, health at work, and more effective treatment and support for obese people³. In this strategy, the Government develops and builds upon a number of existing approaches to tackling obesity, such as prevention of obesity in childhood given evidence of the 'conveyor belt effect' of childhood obesity which shows that children who are obese are more likely to be obese in adulthood compared to those who are not.

Existing measures to address obesity also include providing supportive environments which enable individuals to make healthier choices, for example, the 'traffic light' system on food packaging and '5-A-Day' mass media campaign promoting fruit and vegetable consumption. Changes to the physical environment in some areas have been made to improve cycling facilities and make communities more pedestrian friendly.

Ultimately, 'obesity policy' is about *behaviour*, and the ability of policymakers to influence and affect the choices and behaviour of individuals. Although a focus on particular sub-groups has informed such policy, the effect of *life course* transitions and changes on behaviour have largely been ignored in relation to obesity.

This report therefore deploys a life course approach to review factors influencing behavior and choices relating to balanced diets and physical activity. The 'life course approach' views the action and behaviour of individuals in the context of the continuum of their lives from birth to death, and transition through various life stages and transition points. These key life stages and transition points can render individuals more susceptible to negative health outcomes. However, they also present opportunities for intervention, for example with healthcare services, educational institutions and employers.

¹ The most recent data indicate there was a marked increase in obesity between 1993 and 2006. The proportion of men with a Body Mass Index (BMI) of 30 or over increased from 13.2 to 23.7 percent and that of women from 16.4 percent to 24.2 percent¹. These were increases of almost 80 and 48 percent respectively. In children, in the decade 1995-2006, the proportion of obese boys increased by almost 60 percent from 10.9 to 17.3 percent¹. In girls, the increase was from 12 to 14.7 percent with a peak of 18.3 percent in 2005¹. It is unclear at present if this decrease in obesity in girls is part of a downward trend or a trough.

² Government Office for Science, Foresight Report: Tackling Obesity: Future Choices. London HMSO, 2007

³ Department of Health(2008) Healthy Weight, Healthy lives: A Cross-Government strategy for England

Factors Influencing Health Behaviours

What is meant by health behaviour in the context of obesity policy? Health behavior and the adoption of healthy behaviours by an individual depends on a number of factors. These include a person's physical and social environment.

In the *physical* environment, the communities in which people live and work influence their health behaviours. For example, with regard to physical activity, the built environment and transportation links have significant influences on the uptake of physical activity. Communities which are more 'walkable' and 'cyclable' are more likely to encourage individuals to be more physically active while those that are not discourage such activities and may in fact promote the use of motorized transport. Within the *social* environment, the influence of family and peers and other social and cultural norms influence the behaviour of individuals. Further, their health literacy (which may be a function of educational background and socioeconomic status) and the availability and accessibility to sources of information about health such as the Internet, television, magazines and health professionals, influence health related behaviours.

Such factors which influence health behaviours undoubtedly vary by life stage. An enormous amount of research and policy development has focused on physical and social environmental factors in driving obesity, and some of this work has adopted a life course perspective.

However, of greater interest here are other factors key to determining health behaviours:

Perceptions of risk

When a person perceives the risk of developing ill health as a result of a particular behaviour as low, an individual is unmotivated to change existing behavioural patterns. For example, when individuals who are overweight or obese do not accurately perceive the health risks associated with being so, such as an increased risk of diabetes, osteoarthritis or cancer, then they are not motivated to change their behaviours such that they might achieve a healthier weight status. Perceptions of risk may be shaped by how far into the future the likelihood of having ill health as a result of unhealthy behaviour is believed to be.

Perceptions of cost and benefits of the recommended health behaviour

Strongly related to perceptions of risk are the perceptions of costs and benefits of recommended health behaviours. If the risks of ill health are not accurately perceived, this affects how individuals will perceive the cost and benefits of the recommended health behaviour. With regards to obesity, if an individual expects the benefits of committing to a physically active life and healthy eating to be worth the costs of doing so (taking the time to be physically active and eating a balanced diet) then they are more likely to lead a healthier lifestyle.

Perceptions of self

In addition to the above perceptions of risk and costs and benefits of the recommended health behaviour, perceptions of self including self efficacy, which is the conviction that one can successfully execute a new behaviour, are essential in the adoption of that health behaviour.

With regard to obesity, the accurate perception of three factors is required if behaviour is to be changed or adopted:

Weight perception;

- Several studies have addressed weight perception among individuals. For example, a recent study has revealed that while from 1988-2004 obesity increased in the United States, this has been accompanied by fewer overweight people perceiving themselves as thus⁴. The principal reason is that individuals tend to view whether they are overweight or not by comparing themselves to others in their social networks or communities and not based on what their ideal weights should be. Therefore, as more individuals have become overweight and obese in the United States, these conditions have become the 'norm' leading many to inaccurately perceive their weight status. Studies in England have shown similar results. In particular, there is a lack of accurate perceptions of overweight and obesity among parents (especially fathers) whose children are overweight and obese with a significant majority of parents reporting that the weight of their children is 'just right'^{5,6}. As perception of weight status becomes more distorted, it lessens the likelihood that individuals will make the recommended behavioral changes for themselves or their children which are necessary to realize the health benefits associated with even small weight loss.

Perception of dietary intake including fruit and vegetable consumption;

- With regard to dietary intake, Bogers et al⁷ and Oenema & Brug⁸ among others, have shown that awareness of ones' own fat consumption or ones', own fruit and vegetable consumption was strongly associated with motivation to change behavior.

Perception of the amount and level of physical activity undertaken.

- The influence of weight perception on physical activity has also been explored. Atlantis and colleagues for example, found that overweight perception may be a barrier to physical activity participation among men and women with excess body weight⁹.

Each of these factors vary by life stage and key transition points in the life course¹⁰. However, little effort has been expended in exploring how perceptions affecting health behaviour vary across the life course and their effect in causing obesity.

⁴ Johnson-Taylor WL, Fisher RA, Hubbard VS, Starke-Reed P, Eggers PS. The change in weight perception of weight status among the overweight: comparison of NHANES III (1988-1994) and 1999-2004 NHANES. *Int J Behav Nutr Phys Act.* 2008 Feb 12;5:9.

⁵ Carnell S, Edwards C, Croker H, Boniface D, Wardle J. (2005) Parental perceptions of overweight in 3-5 y olds. *Int J Obes (Lond).* 29(4):353-5.

⁶ Insert addition reference

⁷ Bogers RP, Brug J, van Assema P, Dagnelie PC. (2004) Explaining fruit and vegetable consumption: the theory of planned behaviour and misconception of personal intake levels. *Appetite.* 42(2):157-66.

⁸ Oenema A, Brug J. (2003) Feedback strategies to raise awareness of personal dietary intake: results of a randomized controlled trial. *Prev Med* 36(4):429-39.

⁹ Atlantis E, Barnes EH, Ball K. Weight status and perception barriers to healthy physical activity and diet behavior. *Int J Obes (Lond).* 2008 ;32(2):343-52.

¹⁰ These are but a few of factors that influence health behaviour. Habits also influence health behaviour and it is important to note that factors such as socio-economic status, ethnicity, gender and age will mediate upon these factors that influence individual behaviour.

Risk Perception, Obesity and the Life Course

Six stages of the life course are identified below: *pregnancy and fetal development, infancy and childhood, adolescence, young adulthood (ages 18-35), adulthood (36-65) and later life (ages 65+)*. These stages, although distinct in themselves, merge imperceptibly into one another with key transition points such as parenthood, entry into education, start of paid employment, marriage, end of dependent parenting, end of paid employment, occurring within and between the different stages.

How might life stage and life course transition points affect the perceptions of risk relating to obesity among individuals?

1. Pregnancy and Fetal Development

During pregnancy all women gain weight, but this may trigger the development of obesity, as a result of several factors. For example, some people believe that pregnant women can eat whatever and how much they want to eat as they are 'eating for two'. This may result in excessive caloric intake during pregnancy.

Further, although physical activity is recommended for healthy pregnant women, there are many barriers (real and perceived) for pregnant women to actually undertake such activities. Some barriers may include the belief that is too dangerous to exercise or not knowing which forms of exercise to undertake.

Maternal obesity may impact not only on the mother but also on immediate pregnancy outcomes and on the life and health of the offspring throughout the life course, i.e. the risk for becoming overweight in childhood or adulthood can begin during pregnancy with additional risk factors accumulated throughout the life course. Prenatal risk factors for childhood overweight include being small for gestational age or being large for gestational age¹¹.

During pregnancy it is imperative that women be aware of the need to gain appropriate weight and for them to know what the appropriate weight gain should be. Pregnant women should also be encouraged to consume a healthy and balanced diet as well as to undertake physical activities. Expectant mothers have significant contact with health services and health service providers should take full advantage of this. Interventions can exploit the desire many expectant mothers have to ensure the best outcomes for their offspring by particularly focusing on the impact of maternal obesity on the fetus.

2. Infancy and childhood

During infancy and childhood there are risks of children becoming overweight or obese. In infancy, breastfeeding may provide some protection against childhood overweight and obesity. This may be directly related to the length of exclusive breastfeeding with children who are breast fed exclusively for longer periods of time being likely to be less obese than those who are formula-fed¹². In addition, breastfeeding also has positive benefits for the mother as women who breastfeed are more likely to lose weight gained during pregnancy than those who do not.

During childhood, there is a decline in adiposity and BMI in infancy which reaches a nadir between ages of 5 and 7. There is evidence that children who reach this nadir earlier (early adiposity rebound) are more likely to be obese when they reach adulthood compared to those

¹¹ Saenger P, Czernichow P, Hughes I, Reiter EO. Small for gestational age: short stature and beyond. *Endocr Rev.* 2007;28(2):219-51.

¹² Arenz S, Ruckerl R, Koletzko B, von Kries R. Breast-feeding and childhood obesity--a systematic review. *Int J Obes Relat Metab Disord.*; 28(10):1247-56.

who do not¹³. The adoption of healthy behaviours during these early years is especially dependent on the parents. It is critical that parents have accurate perceptions of their children's weight status as well as ensuring that their children have a balanced diet and undertake adequate physical activity. However, as discussed above, there is evidence that most parents whose children are overweight or obese do not perceive their children to be so. During these early years, parents are still in significant contact with health services providers who can target them. Further, as children enter into school this provides a key intervention point for schools to work with parents in raising their awareness about what their children's ideal weights should be.

3. Adolescence

The adolescent years can be a period where healthy (or unhealthy) habits which persist through out the life course can be adopted or become ingrained. For adolescents, the home environment still plays a significant role in shaping and influencing health behaviours. While a significant number of meals each week may still be eaten at home, during adolescence many individuals may begin to consume more food and meals outside the home which in general is less healthy. The school environment provides an opportunity to offer healthy meals and teaching about healthy foods and government has focused significant efforts and resources on ensuring a 'healthy school environment'.

The school environment can provide opportunities for undertaking a minimum number of hours of sport and physical activity. However, physical activity starts to decline in girls when compared to the earlier years because of puberty and body self-consciousness. Barriers to being physically active include girls not perceiving themselves as the 'sporty types', and these and other barriers need to be overcome.

While the family environment may still be important, during adolescence, peers play a significant role in influencing behaviour and are likely to influence weight, dietary intake and physical activity. Perceptions of risk of being obese or overweight are likely to be significantly influenced by peers. Interventions to reduce overweight and obesity should utilize this strong peer influence, for example by using peer-led support groups.

4. Young adulthood (18-35 years)

Young adults are at a significant risk of being overweight and obese. In the US, for example, young adults have been found to be at a higher risk of weight gain compared to older adults. In adults aged 25-74, major weight gain over 10 years (BMI gain > 5kg/m²) was highest at ages 25-34¹⁴.

Factors which may lead to young adults being at high risk of such weight gain may be the transitional nature of this life stage which is characterized by increased independence from families, entry into tertiary education, entry into the work force, high mobility, marriage, and parenthood. These factors and others such as such as having fewer economic resources at this age, may also serve as barriers to successful interventions for weight loss in this group.

Young adults in first employment or tertiary education face particular challenges in following healthy diets and being physically active. Evidence from the US reveals that university students gain significant weight during their first year of university - the so called 'Freshmen 15'. While the weight gain may on average be less than 15 pounds, a significant proportion of students gain weight which on average is higher than in the general population^{15 16}. The

¹³ Taylor RW, Grant AM, Goulding A, Williams SM. Early adiposity rebound: review of papers linking this to subsequent obesity in children and adults. *Curr Opin Clin Nutr Metab Care.*;8(6):607-12.

¹⁴ NHLBI Working Group Report- Preventing Weight Gain in Young Adults (2005)
<http://www.nhlbi.nih.gov/meetings/workshops/wgt-gain.htm> (Accessed May 2008)

¹⁵ Racette SB, Deusinger SS, Strube MJ, Highstein GR, Deusinger RH. Changes in weight and health behaviors from freshman through senior year of college. *J Nutr Educ Behav.* 2008 Jan-Feb;40(1):39-42.

¹⁶ Holm-Denoma JM, Joiner TE, Vohs KD, Heatherton TF. The "freshman fifteen" (the "freshman five" actually): predictors and possible explanations. *Health Psychol.* 2008 Jan;27(1 Suppl):S3-9.

causes of this weight gain include increased alcohol intake, the consumption of energy dense in 'all you can eat' cafeterias that are provided in many catering dormitories, and eating late at night. Further, lack of exercise and lack of sleep have also been implicated. For those who may have been physically active during university, entry into sedentary employment can potentially lead to weight gain in young adults.

Marriage and parenthood are key transition points that can serve as triggers for weight gain. Parenthood, with its many demands, provides time pressures for parents who may find it more difficult to undertake physical activity as a result of needing childcare to be provided while they do so. In addition, as most parents work, finding the time to cook healthy wholesome meals at home becomes increasingly difficult.

From a psychological point of view, young adults may be less motivated to adopt and maintain healthy behaviors because they perceive health consequences of being obese to be in the distant future. At this age, most will not have developed the ill health that is associated with being obese such as cardiovascular disease or mobility issues. Further, this age group, similar to adolescents, may still be quite sensitive to peer pressure.

Interventions that should be considered in promoting weight loss among this age group are ones that may employ electronic media that is frequently used by this group such as the internet, mobile phones, and MP3 players. Further, as peer influence may be still be strong and social networks which utilize peer influence might also be considered e.g. peer-led groups or peer-peer counseling.

Universities and trade schools provide venues for interventions for young adults. Pregnant women and new parents might be open to interventions that could additionally have positive effects on their children's health; thus, possible settings include pediatric or obstetrics practices, well-baby clinics/programs, and parenting classes. Interventions should take advantage of these and other important life events that may provide opportune settings or strong motivations for behavioral and environmental changes.

5. Adulthood/Middle (Age 36- 65)

The adult stage is a key phase in the life course – both in terms of 'expression of most chronic disease but also as a critical time in the preventative reduction of risk factors and as well as increasingly effective treatment'¹⁷.

Most chronic diseases start to manifest themselves in this age group. There is evidence to suggest that if weight gain is avoided in early adulthood the risk for CVD may be reduced. Within this age group the proportion of individuals who are obese or overweight increases significantly.

Perception of risks of ill health as a result of being obese or overweight may be more realistic as ill health consequences are likely to be perceived as being proximal. In this particular life stage, individuals are likely to know colleagues or friends of their age who may undergo adverse health events such as heart attacks. A key life stage event in this age group is the end of dependent parenthood. This may result in, for example, not having time to be physically active not being a barrier and so opportunities for uptake of physical activity interventions may be increased.

6. Later life/Elderly (Age 65+)

There is a growing number of older people who are overweight or obese. This is a result of more people reaching old age already overweight and the increase in the aging population. In old age, obesity is associated with increased morbidity which impacts on their quality of life. It can exacerbate the age-related decline in physical function and lead to frailty.

¹⁷ (Darnton-Hill et al, 2004).

Late in life perceptions of risk of being overweight or obese may be driven by the fact that individuals are resigned to the fact that as one gets older 'their metabolism slows down' and so being obese/overweight may be perceived as the norm. That is, it is accepted as being a part of the aging process.

In this particular age group, retirement from paid employment is a key life transition stage and with individuals more and more likely to live well into their 80s and beyond, it is critical that this be fully exploited as a key point for intervention to encourage individuals to lose weight.

Appropriate treatment for obesity in older persons is controversial because of the reduction in relative health risks associated with increasing body mass index and the concern that weight loss could have potential harmful effects in the older population. However, there is evidence that weight-loss therapy improves physical function, quality of life, and the medical complications associated with obesity in older people.

Conclusion

Obesity is a result of complex interactions between genetic, behavioral, social and environment factors. To date, policy makers have focused on the environmental factors by endeavoring to provide supportive environments for individuals to help them 'choose' healthier choices. In particular, government has focused on providing messages promoting the consumption of recommended daily fruit and vegetable intake and food labeling. While these 'upstream' approaches are essential in any comprehensive policy approach to tackling obesity, a key area that government still needs to input significant investment is to understand at the individual level what the drivers are to what makes others 'choose' healthier choices but not some.

At the individual level, there are many factors that impact on health related behaviours including social and environment factors as well as habits. Further, there are cognitive factors which include perceptions of risk among other things. This policy brief has sought to look at how perceptions of risk of being obese/overweight might vary across the life course and highlight key transition points which might be exploited in efforts to manage and treat obesity.