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Obesity and overweight in the United Kingdom – overcoming obesogenic environments

Summary

Obesity levels in the UK are among the highest in the world, and as with other countries this is related to an imbalance between energy intake and energy expenditure. Rapid societal change over the last 30 years has resulted in the development of obesogenic environments which promote unhealthy eating patterns and insufficient physical activity levels in a considerable proportion of the UK population. Health patterns in the UK show a social gradient, as well as distinctive geographical variations. The mechanisms underlying these patterns remain, however, largely unexplained. Changes in the prevalence of obesity are not just the outcome of individual behaviours, but are also associated with the physical, social and cultural context of individuals and communities. Promoting healthy environments in the face of increasingly obesogenic conditions remains a major challenge for health policy and practice.

1 Introduction

Obesity levels in the UK are among the highest in Europe (Figure 1). In England for example, 66% of men and 57% of women were overweight or obese in 2008, and the percentage of obese adults has increased by about 10% since 1993 (THE HEALTH 2009). In children, obesity levels have also increased by about 6% in boys and 3% in girls since 1995, and currently 17% of boys and 15% of girls have been classed as obese (THE HEALTH 2009). The main reasons for this development have been related to decreasing levels of physical activity, and changes in the food environment leading to modifications in eating behaviours. This increasing prevalence in overweight and obesity causes significant costs to the National Health Service. In 2002, the direct costs for the treatment of diseases related to overweight and obesity were estimated to be £3.23 billion, the largest proportion being due to stroke (£983 million), coronary heart disease (£773 million), hypertensive diseases (£576 million) and diabetes mellitus (£533 million) (ALLENDER and RAYNER 2007).

This article sets out to present current trends in obesity, overweight and physical activity, outlining the main reasons for current developments and particularly focussing on aspects of the socio-cultural environment, a currently under-

researched dimension of the obesity pandemic. We present some results of our own research which is concerned with declining levels of physical activity within the socio-cultural context of industrial restructuring in England. We subsequently discuss approaches, initiatives and programmes for promoting healthy environments and life styles under increasingly obesogenic conditions¹, and we link this work to the concept of therapeutic landscapes.

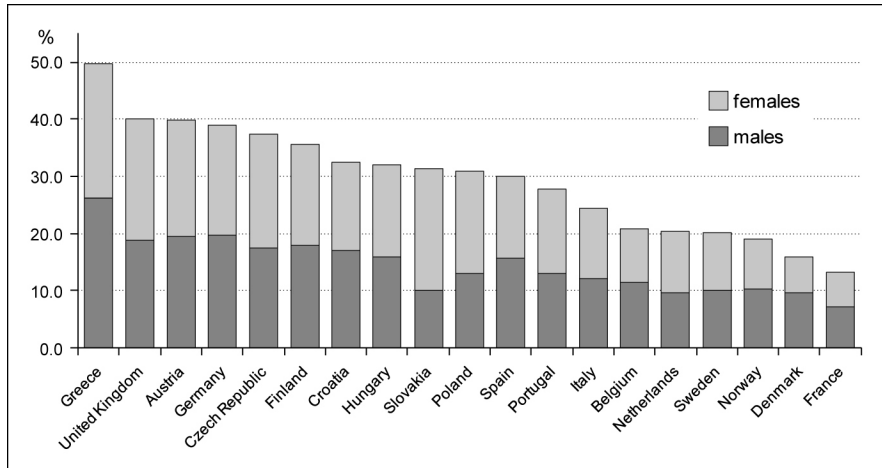


Fig. 1: Obesity levels in selected European countries, 2002 (WHO 2005).

2 Weight gain – it is not just the outcome of individual behaviours

Overweight and obesity are outcomes of an imbalance between energy intake (diet) and expenditure (physical activity).² The reasons for weight change are multicausal, interrelated and comprise genetic, biological, psychological, social, cultural, and environmental factors (KOPLAN et al. 2005). For example, there have been significant changes in eating patterns. Data for the United Kingdom suggests an increase in mean daily caloric intake by 63 kcal from 1970 to 1984 and by 190 kcal from 1985 to 2002 (BLEICH et al. 2008). Furthermore, there was general decrease in physical activity in England between the 1970s and the early 1990s (JAMES 1995). Since the early 1990s, temporal trends in physical activity in England suggest an upward trend in recreational sports participation (STAMATAKIS et al. 2007) but the increase in leisure time physical activity is small and insufficient to close the energy gap. FOX AND HILLSDON (2007, 116) list 5 reasons for a reduction in energy expenditure:

¹ SWINBURN et al. (1999, 564) define obesogenic environments as “the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations”. In contrast, leptogenic environments promote leanness by encouraging a balanced diet and sufficient exercise (SWINBURN et al. 1999).

² Overweight is defined as body mass index (BMI) $\geq 25\text{kg/m}^2$. Obesity is defined as BMI $\geq 30\text{kg/m}^2$ (WHO 2005). Physical activity is defined “as any bodily movement produced by contraction of skeletal muscle that substantially increases energy expenditure” (HOWLEY 2001, 364) and subdivided into the main categories of leisure-time, occupational, domestic and transport-related physical activity.

1. fewer jobs requiring physical work as the UK has changed from an industrial to service-based economy;
2. increased labour-saving technology in the home, work and retail environments;
3. changes in work and shopping patterns – from local to distant – that have resulted in greater reliance on motorized transport;
4. increased self-sufficiency in the home, including entertainment, food storage and preparation, controlled climates and greater comfort;
5. reductions in walking and cycling.

There is considerable evidence that the place where people live impacts weight-related health outcomes and behaviours (JONES et al. 2007). For example, studies from England have identified a distinct north-south gradient in overweight and obesity that is independent from individual characteristics such as age, gender, ethnicity, level of education, and social class (MOON et al. 2007; SCARBOROUGH and ALLENDER 2008). ELLAWAY et al. (1997) found that neighbourhood of residence was significantly related to various measurements of obesity and overweight (e.g. BMI) after controlling for demographic characteristics, individual socio-economic status, and smoking behaviour. Further studies emphasised the significance of local determinants of physical activity and diet and identified significant associations between obesity, neighbourhood disorder (e.g. crime levels, physical dereliction), access to food outlets, and sports and health care facilities (HILLSDON et al. 2007; JACKSON et al. 2008; PEARCE et al. 2008; STAFFORD et al. 2007).

Frequently, current research focuses separately on correlates of physical activity, characteristics of the physical or social environment, dietary aspects, spatial variations in obesity rates and physical activity levels. MACINTYRE et al. (2002, 129) have suggested that there is a lack of “clear theorising about the mechanisms which might link area of residence and [health outcomes]”. The authors propose a new framework for unpacking “the black box of places” which is based on compositional (characteristics of individuals), contextual (opportunity structures in the local physical and social environment) and collective explanations. The latter adds characteristics which are concerned with socio-cultural and historical features of places and offers an additional perspective on the socio-economic, psychological, and epidemiological angles for exploring area effects on health (MACINTYRE et al. 2002; STAFFORD et al. 2007).

3 The socio-cultural environment

The socio-cultural environment is known to play an important role in influencing sedentary and non-sedentary behaviours, eating behaviours and weight levels. According to MACINTYRE et al. (2002, 131), the socio-cultural context of a neighbourhood comprises “the political, economic, ethnic and religious history of a community [which includes] norms and values, the degree of community integration, levels of crime, incivilities and other threats to personal safety, and networks of community support.” The term thus refers to attitudes, beliefs, and values related to food, physical activity and body image within a society or community influenced by gender, age, ethnicity, traditions and religion

(BENJAMINS and BUCK 2008; MAVOA and MCCABE 2008; SWINBURN et al. 1999).

The variety of socio-cultural factors that have been identified in the literature have been classified into social roles and relationships (marital status, care giving role, motherhood), ethnicity and cultural factors (ethnic background), and socio-economic status (work role, income, education level, occupation) (BALL 2006; BALL and CRAWFORD 2005) (Figure 2). All those factors incorporate different behavioural pathways. Within different cultures for example, values and beliefs about food, eating, physical activity and body image vary and result in different behavioural outcomes which in turn will influence the energy balance and the weight status of an individual.

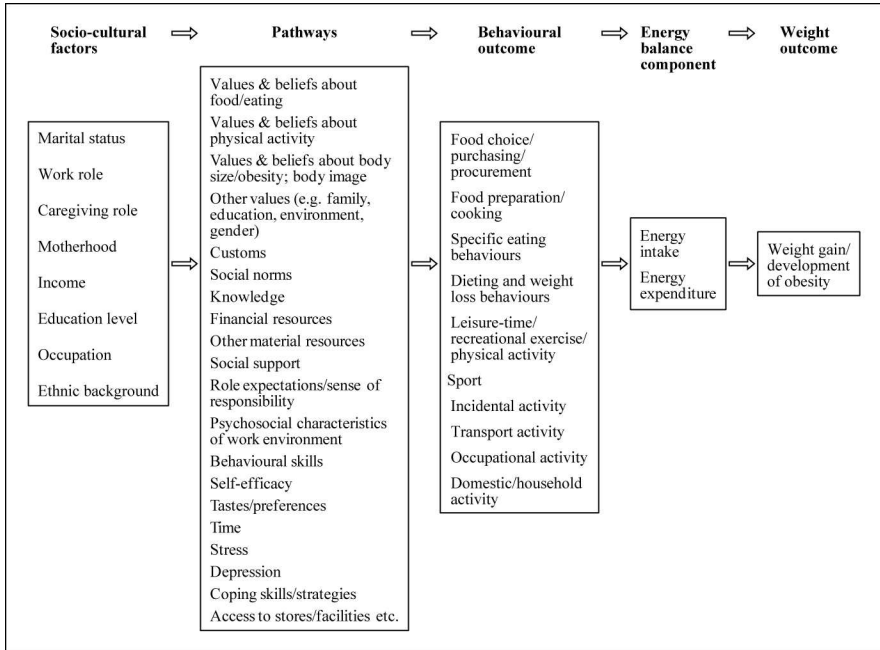


Fig. 2: Conceptual model of pathways linking selected sociocultural factors with obesity (BALL u. CRAWFORD 2005, 45)

There is some evidence from the UK that recent trends in obesity and physical activity levels might be related to factors associated with socio-cultural change. A relative deterioration in health has been shown in areas of the UK experiencing deindustrialisation during the 1980s which has been related to economic decline and socio-demographic change (PHILLIMORE et al. 1994; MITCHELL et al. 2000). However, the role of the socio-cultural environment and its effect on adults and children remains largely unexplained. In particular, the ways in which attributes of the environment may interact with socio-demographic and socio-cultural characteristics in order to explain the interrelation of levels of physical activity and weight status has not been well understood.

4 Research case study: Physical activity and the socio-cultural context of industrial restructuring – evidence from England

There is evidence from surveillance studies that areas exhibiting the lowest levels of physical activity tend to be those which have undergone a particularly strong transition away from employment in physically demanding occupations. Recently, ELLIS et al. (2007) explored the relationship between physical activity levels and self-reported health in 29 socio-economically deprived areas in England and observed that residents of northern industrial cities tend to have lower activity levels than those located in southern and eastern cities.

Our own research is concerned with the socio-cultural context of industrial restructuring and how this may impact current levels of physical activity across the whole of England. The loss of manual jobs has resulted in a disproportional decrease in occupational physical activity, particularly in areas heavily affected by the demise of employment in the manufacturing sector. We hypothesise that processes of industrial decline may be causally linked to unexplained geographical disparities in levels of physical activity.

Using data from a large population survey, we developed measures of primarily recreational physical activity as well as more sedentary behaviours (RIND and JONES 2011). Subsequently, we investigated variations in activity patterns across 354 English Local Authority Districts, which are administrative areas of local government. We observed geographical variations in activity patterns showing not only urban-rural disparities, but also distinctive north-south variations. Residents of more urban northern districts generally reported less recreational activities than their rural counterparts, and areas in the Midlands and the North were particularly affected. These regions also had significant losses in industrial employment during the 1970s to 1980s (IMRIE, 1991; JARVIS et al. 2001). We suggest that it is likely that areas with historically high employment in physically demanding occupations have developed cultures of non-participation in activities outside the working environment, and these activity patterns may persist till today. Work in progress indicates that processes related to industrial restructuring appear to be associated with patterns of physical activity, although the nature of the association differs across areas, time periods and employment types. Our results suggest that socio-cultural factors relevant in the context of industrial restructuring are likely to provide valuable context in activity related research.

5 Promoting healthy environments

The rapid increase in the prevalence of overweight and obesity since the 1980s indicates that large scale drivers such as changes in nutrition, physical activity levels and societal changes are making it increasingly difficult to avoid obesity promoting environments (MCLAREN 2007). Creating accessible and affordable healthy food choices and eating environments requires policy and environmental approaches that address both individual behaviours and the environmental context in which people live (STORY et al. 2008). Macro-level approaches, for example, aim to support a balanced energy intake via food and agriculture policies, economics and pricing issues as well as media influences. Interventions designed in

this context are framed within the settings and places for a healthy eating environment including homes, child care, schools, the work place, the retail food environment, and places for eating out.

In terms of energy expenditure there are three main domains within which to encourage physical activity including recreational, occupational and transport physical activity (FOX and HILLSDON 2007). There is, for example, evidence that the promotion of attractive, accessible and affordable sport and health facilities may positively impact health outcomes. A study from Ireland showed that adolescents who reported convenient access to sports facilities such as running tracks, football fields, parks or gyms were less likely to be overweight or obese (NELSON and WOODS 2009). In 2008, however, only 39% of men and 29% of women in England met the governments' recommendation for sufficient physical exercise (30 minutes or more activity per day of at least moderate intensity on at least five days per week) suggesting that national campaigns encouraging sports participation have not been highly successful (THE HEALTH 2009). Increasing occupational physical activity appears to have a limited scope (FOX and HILLSDON 2007), but there are initiatives to encourage active travel including walking and cycling to and from work. Sustrans for example, is a UK charity promoting several active travel programmes. In 2010, almost 3 million people used the Sustrans National Cycle Network which has been reported to lead to increased activity levels in 71% of its users (SUSTRANS 2010). Furthermore, the charity created new walking and cycling routes for more than 256 schools which has been reported to lead to a 125% increase in the number of children cycling to those schools every day.

Interventions targeting both sides of the energy balance are frequently related to specific community settings. Improving health behaviours at the community level has been shown to play an important role in health education. According to MINKLER et al. (2008), the creation of sustainable environments that include high-level participation in community-driven projects is based on the concepts of empowerment, critical consciousness, community capacity, social capital, issue selection, participation and relevance. With its slogan "eat well, move more, live longer", the "Change4Life-programme", a society-wide initiative primarily targeting young families, was introduced by the Department of Health in March 2009 to tackle increasing overweight and obesity rates (DEPARTMENT OF HEALTH 2009). The programme provides information on how to increase physical activity (up & about, 60 active minutes) and promote healthy eating (5 a day, meal time, snack check, me sized meals, cut back fat, snack swap). More than 400,000 families were registered by the end of 2009. Registered families receive additional information and support such as consumer packs focussing on healthy food options.

Linking place, space and network activities within specific physical, social and cultural environments to health and well-being is a key component within the concept of therapeutic landscapes (SMYTH 2005). The "Bramble Farm", a small holding in the urban setting of Bristol, is a good example for a community based initiative encouraging comprehensive life-style changes based on sustainable food production and community engagement (BRAMBLE FARM 2008). The project exemplifies a holistic approach towards a sustainable living environment. In a recent review of the contribution of domestic gardens to urban green infrastructure,

CAMERON et al. (2012) specifically address the relevance of gardens in terms of their cultural, health-related and therapeutic context. Many aspects of gardening, including the cultivation of allotments and small holdings, have been shown to positively impact well-being and health. Numerous studies have also related gardening activities to increased physical activity, a better understanding of healthy food environments, stress relief and the development of social networks (e.g. MILLIGAN et al. 2004; PARK et al. 2009; HALE et al. 2011).

6 Concluding remarks

Obesity levels in the UK are high and the ways in which biological, behavioural and the environmental factors impact energy equilibrium are still poorly understood. Nevertheless, the rapid increase of unhealthy weight levels and obesity-associated diseases within a relatively short period of considerable societal change indicate that environmental factors play an important role in understanding the multi-causal determinants of the obesity pandemic. In particular, socio-cultural determinants of eating and exercise behaviours might provide further evidence to explain variations in weight levels which could facilitate the development of successful programmes to reduce the prevalence of overweight and obesity. Initiatives addressing only one side of the energy balance appear to be unsuccessful, and it appears that those which are likely to be most successful will be ones that promote life style changes at a broader scale through the promotion of healthy food and exercise environments as well as the development of sustainable community networks.

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