

SLIMMING WORLD - WRITTEN EVIDENCE (FDO0027)

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This response is being submitted on behalf of Slimming World, a UK based weight management organisation and has been written by the above individuals who work for the company in the Nutrition, Research and Health department. Below we have responded to two of the key questions in the enquiry. References have been provided and we would be open to discussing this further.

Q2. The primary drivers of obesity both amongst the general population and amongst distinct population and demographic groups.

Body weight gain and obesity is the consequence of sustained positive energy balance over time. When there is an energy imbalance where energy intake exceeds energy expenditure, excess energy is stored primarily as body fat (Hill et al, 2010). The maintenance of a stable bodyweight requires energy intake (from food and drink) to equal energy expended (via resting energy expenditure, the thermic effect of food and through physical activity) over time. However, just small deviations from energy balance (1-2% of daily intake) can result in significant weight gain over time (Hall et al, 2011).

Whilst weight loss can be achieved through temporary changes in either diet or physical activity, achieving weight loss maintenance in the long term requires permanent behaviour changes and is understandably more challenging. Simply advising someone to reduce energy intake, for example through smaller portions of food and calorie counting, may appear appropriate to control weight and manage obesity, but is unlikely to be effective for sustainable weight control given the more complex nature of eating behaviour, appetite and energy balance. Compensatory metabolic and behaviour mechanisms occur in response to changes in energy balance, and evidence suggests the compensatory response appear to be stronger when in energy deficit (ie reduced energy intake) than when in positive energy balance (Stubbs et al, 2023), therefore favouring weight gain. Physiological changes during underfeeding and energy deficit include reduced energy expenditure and stimulation hormonal pathways driving appetite, for example (Casanova et al, 2019, Sumithran & Proietto, 2013). Therefore, in order to manage weight and reduce levels of obesity it is important to consider the impact of foods on

appetite and feelings of satisfaction to support people in managing an increased hunger drive and desire to eat whilst in calorie deficit.

Research indicates that the nature and composition of foods, dietary macronutrients and energy density, impact on our sense of satisfaction and satiety (Stubbs et al 2010). A strong evidence base indicates protein, carbohydrates and fat exert different effects on satiety and energy intake, in that protein is more satiating than carbohydrate which is more satiating than fat (de Castro, 1998; Stubbs et al, 2000; Stubbs et al 2023; Weststrate et al, 1992). High fat foods have been found to have little effect on satiety and due to their higher energy density (fat containing 9kcal/g) and oro-sensory properties, encouraging passive overconsumption (Blundell & Macdiarmid,1997). Consuming a higher intake of more satiating (protein and carbohydrate rich) foods rather than fat-rich foods can therefore help limit energy intake and support sustainable weight control.

Studies also show that fullness and satiety are related to the volume of eaten rather than calories consumed (Bell et al, 1998, Rolls et al, 2004). Low energy dense foods contain fewer calories per gram than high energy dense foods and tend to be higher in the macronutrients that support satiation and satiety (Stubbs et al, 1996). Increasing dietary energy density of the diet increases energy intake and results in weight gain and vice versa (Stubbs et al, 2023). Having more low energy dense foods in the diet can therefore increase the volume of food eaten, helping to satisfy appetite, while reducing energy intake (Bell et al, 1998, Ello-Martin et al, 2007, Roe et al, 2012). A lower energy density diet has been shown to be more effective than simple self-led calorie control in improving appetite regulation and weight control. In a study led by the University of Leeds it was found that participants who consumed low energy dense meals (based on protein-rich foods, complex carbohydrates and limited fat and sugar within Slimming World's healthy eating plan) felt significantly more full and less hungry than those eating high energy dense meals, despite consuming the same number of calories. Compared to calorie-counting, those following the lower energy density eating plan also lost significantly more weight (6.2% body weight compared to 3.8% over 14 weeks) reported increased feelings of control around their food choices and a greater confidence in their ability to stick to their eating plan (Buckland et al, 2018).

There is a huge interest in ultra processed foods and links with obesity yet the relationship between the two is complex and yet to be fully explored. While associations between intake of ultra-processed food and obesity are seen in epidemiological studies (Hall 2023), this does not necessarily indicate that ultra-processed foods or the processing per se causes weight

gain and obesity. Ultra-processed foods often have high fat and sugar content and typically higher energy density and lower in volume than less processed foods and lower in relative protein content (Monteiro et al, 2019, Rolls et al, 2020, Stubbs et al, 2023). Energy density and texture appear to be important mediators of energy intake and should not be ignored (Teo et al, 2022). Therefore, if considering the role of ultra-processed foods in weight control and obesity it is important to take into account the macronutrient content, energy density and texture to better understand their impact on appetite regulation and energy intake.

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4. The influence of pre- and post-natal nutrition on the risk of subsequent obesity, and the specific influences on the diet of children and adolescents that contribute to the risk of becoming obese

Despite nutritional inadequacies at micronutrient level, many women of child-bearing age are living with overweight or obesity suggesting an excessive energy intake and/or sedentary behaviours. Data from the 2018 Health Survey for England suggests that between 34.9 and 61.3% of women aged 16-44 years are living with overweight or obesity (HSE, 2018) (figure 1).

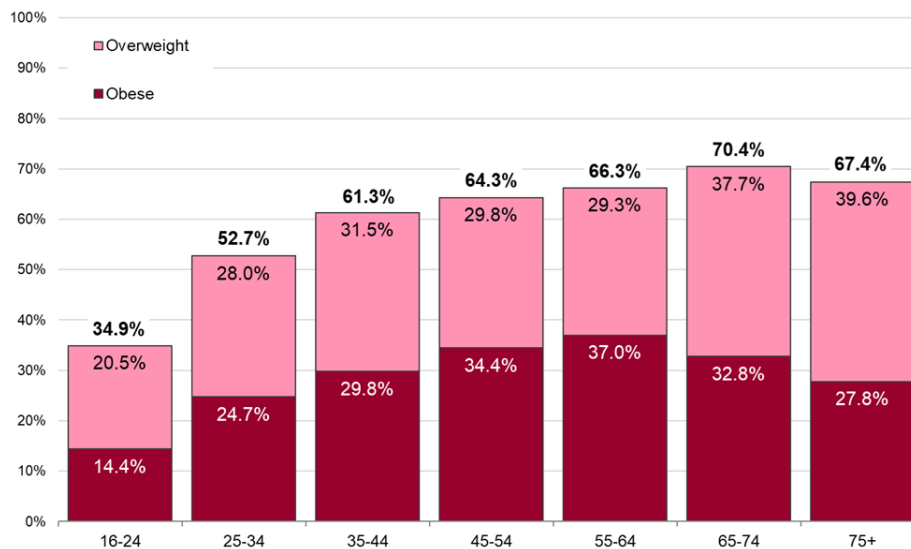


Figure 1: Prevalence of overweight and obesity in women (HSE, 2018).

Epidemiological evidence suggests positive associations between childhood obesity and maternal obesity at different stages of the maternal life-course (Moussa et al, 2016), with the majority of data identifying links with the presence of maternal obesity at pre-conception (Heslehurst et al, 2019), and during childhood (Télléz-Rojo et al, 2019). Heslehurst et al, 2019 looked at the influence of pre-pregnancy weight status and found significantly increased odds of child obesity with maternal obesity (odds ratio [OR] 3.64, 95% CI 2.68-4.95) and maternal overweight (OR 1.89, 95% CI 1.62-2.19). Their meta-regression found increasing odds of child obesity with increasing child age. The Thrifty Phenotype hypothesis has been proposed to explain this increased risk of childhood obesity where the relationship between periconceptional and early growth risk factors, including permanent changes in glucose-insulin metabolism, may increase the risk of subsequent adiposity in the off-spring (Barker et al). Since this hypothesis was first proposed over 30 years ago, there has been further

evidence supporting the influence of prenatal and childhood exposures of adiposity and long-term health status in later life (Voerman et al, 2019).

'Excessive' gestational weight gain occurs in approximately 50% of pregnancies and women who may have started their pregnancy with a BMI in the healthy range may find themselves with a raised BMI after pregnancy. Post-partum weight retention (PPWR) is an important contributor to parity-related weight gain. Around 20% of women will retain 4kg or more at one-year post-partum and any PPWR increases the likelihood of long-term maternal weight retention and is a strong predictor of obesity in later life, increasing the risk of developing obesity-related conditions in the mother (Mannan, 2013). Téllez-Rojo et al, 2019 compared the growth-trajectories and children's energy intake according to maternal post-partum BMI classification. They found that at 42 months of age, infants from mothers that remained overweight during the first year post-partum had, on average, 0.61 SD higher weight-for-height z score (WHZ) than those from mothers who were a healthy BMI in the same period. At 60 months of age, children's prevalence of obesity was almost twice in the maternal overweight group (14.2% and 7.3% respectively). Chances for a child of having an excessive energy intake were 36.5% (95% IC: 6.6%, 74.8%) and significantly greater among children from overweight mothers. A concurrent ethnographic study with the study subjects suggested differences in the food landscape might contribute to childhood obesity beyond having an overweight mother.

The post-partum and pre-conceptual period can for some be a continuum with the post-partum period from one pregnancy being the preconceptual period for the next. The ability to return to a healthier weight during the interpregnancy interval will depend on post-partum diet quality, energy intake and expenditure – the latter which may be influenced by the duration and exclusivity of breastfeeding.

The post-partum period is generally overlooked in current healthcare provision and yet represents an important time in the life-stage where good nutrition and appropriate weight management support may improve maternal and infant outcomes for subsequent pregnancies. The SWAN study aimed to determine whether a weight management programme is feasible and effective at helping women lose weight and improve their lifestyle after giving birth. Almost 200 women, living with overweight or obesity, from an ethnically diverse inner-city population were invited to take part in the SWAN study. Half of the women were given normal care, and the other half were offered weight management support which included lifestyle advice and access to a local Slimming World group for 12 weeks. The results showed that women offered the weight management programme saw a 13% reduction in their weight at

12 months post-partum, compared to 4.2% weight reduction among the women offered normal care. Women who attended at least 10 Slimming World sessions saw the greatest benefit (Bick et al, 2020). An earlier service evaluation found that of 1015 women who took part in the study, a mean BMI change of $-2.8 \pm 0.1 \text{ kg/m}^2$ ($P < 0.01$; 95% CI 2.76–3.11) was recorded from baseline to the time of being surveyed with almost 50% of the women joining Slimming World groups between 6–26 weeks post-partum (Avery et al, 2016).

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