Cyflwynwyd yr ymateb i ymgynghoriad y Pwyllgor Iechyd a Gofal Cymdeithasol ar Atal iechyd gwael - gordewdra

This response was submitted to the Health and Social Care Committee consultation on Prevention of ill health - obesity

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Senedd Health and Social Care Committee inquiry into the prevention of ill health – obesity

Response from CLOSER, the home of longitudinal research (UCL Social Research Institute)

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1. About us:

1.1 CLOSER, the home of longitudinal research[1], is the UK's partnership of leading social and biomedical longitudinal population studies and works to increase their visibility, use and impact. Our partner studies[2] comprise national and regional studies from across the UK. CLOSER partner studies include the British Birth Cohort Studies, Millennium Cohort Study, Born in Bradford, Growing Up in Scotland, the Avon Longitudinal Study of Parents and Children, Understanding Society – the UK Household Longitudinal Study, and more.

1.2 CLOSER has been funded by the UKRI Economic and Social Research Council (ESRC) since 2012 and is based at the UCL Social Research Institute.

2. Our reason for submitting evidence:

2.1 CLOSER represents multiple longitudinal population studies across the UK. These national scientific assets follow the same people and households over time, often from

[1] https://www.closer.ac.uk
[2] https://www.closer.ac.uk/timeline/

birth, collecting a wide array of data and information about study participants, which enable researchers and policymakers to explore people's complex lives and how changes in society affect health, community and life chances. CLOSER's strategic position in the research landscape and birds' eye view of the UK's longitudinal population studies makes it an ideal vehicle for identifying and communicating evidence to inform policy.

2.2 The UK's longitudinal population studies are recognised as vital sources of evidence on how obesity and associated health implications affect people across the life course, providing insights into individual short and long-term change and the relationship between different elements of people's complex lives that cannot be obtained from any other data sources. They allow researchers to explore how different groups vary, and how and why people's lives change, enabling a greater understanding of the difference between causal relationships and correlation.

2.3 Several UK longitudinal population studies collect data about the diets and weights of participants, including on life course trends in obesity and the factors that can lead to this. Data from longitudinal population studies has been used in research assessing the causes and effects of obesity, including:

- Understanding Society[3]
- The Millennium Cohort Study (MCS)[4]
- The English Longitudinal Study of Ageing (ELSA) [5]
- The Avon Longitudinal Study of Parents and Children (ALSPAC)[6]
- Growing Up in Scotland (GUS)[7]
- Born in Bradford[8]
- Southampton Women's Survey[9]

2.4 Research using these studies' data has investigated the impact of diet on overweight and obesity in later life, including transitions into and out of overweight and obesity. Research has also investigated which factors are likely to lead to unhealthy weights, especially regarding dietary habits developed early in life, or passed down from a child's parents. Evidence from longitudinal population studies has proven particularly helpful in understanding the effects overweight and obesity can have on individuals' physical and mental health as they age.

The use of longitudinal population studies and the ability to adjust for other parts of people's lives is especially important and something other sources of information struggle to offer.

2.5 Our response focuses on the following items in the terms of reference:

[3] https://closer.ac.uk/study/understanding-society/
[4] https://closer.ac.uk/study/millennium-cohort-study/
[5] https://closer.ac.uk/study/english-longitudinal-study-of-ageing/
[6] https://closer.ac.uk/study/alspac-children-90s/
[7] https://closer.ac.uk/study/growing-up-in-scotland/
[8] https://closer.ac.uk/study/born-in-bradford/
[9] https://closer.ac.uk/study/southampton-womens-survey/

- The impact of social and commercial determinants on obesity.
- Interventions in pregnancy and early childhood to promote good nutrition and prevent obesity.
- The relationship between obesity and mental health.

3. The impact of social and commercial determinants on obesity

3.1 Trends in determinants on obesity over time

- Busy lifestyles and the availability of convenience foods have led to changes in the way we eat. This is reflected in research using data from the 1970 British Cohort Study, which follows the lives of more than 17,000 people born in England, Scotland and Wales during a single week in 1970.
    - In 2012, when the cohort was 42 years old, 28% of the cohort ate ready meals at least once or twice a week and 47% said they ate other convenience foods, like packaged or frozen fish-fingers, burgers, oven chips, or ready-made pizzas, at least once a week [1].
    - 25% of cohort members ate takeaways at least once or twice a week. This was the dietary behaviour most strongly related to being overweight. Nearly a third of cohort members who were obese ate takeaways at least once a week, compared to 21% of those who were normal weight [1].
- One of CLOSER's partner studies following children born in the Avon area of South West England between 1991-1992 (The Avon Longitudinal Study of Parents and Children, or ALSPAC) found that fruit and vegetable intakes were low at ages throughout childhood [2].
    - However, the Born in Bradford study found evidence that the five-a-day messaging was making an impact, with the median consumption of fruit and vegetables being six times per day for 3-year-old children in 2010-2013 (although the amount of fruit/vegetables eaten at each time was not known) [3]. This behaviour is particularly beneficial as it could displace the consumption of unhealthy free sugars which was observed in ALSPAC participants at this young age.

3.2 Socioeconomic inequalities in diets and obesity

- Using data from three national British birth cohort studies (the 1946 National Survey of Health and Development, 1958 National Child Development Study, and the 1970 British Cohort Study), researchers identified large and persisting socioeconomic inequalities in BMI from age 20 up to ages 60-64 [4].
    - Inequalities in BMI according to childhood socioeconomic position were typically larger at older ages and were similar in magnitude at any given age in these cohorts born in 1946, 1958 and 1970 [4].
- In childhood and adolescence, low socioeconomic position was associated with lower weight in earlier born cohorts (1946-1970), but with higher weight in the 2001 Millennium Cohort Study [5].

    - Income and wealth inequality have increased since the 1970s, and some evidence suggests that the price of healthy food items has increased in recent decades [5]. Taken together these could explain the finding that younger cohorts have higher weights.
- In the English Longitudinal Study of Ageing, older adults (aged ≥52) in the poorest wealth quintile displayed significantly higher BMI and waist circumference than those in the richest quintile, with the gap between richer and poorer remaining even at older ages [6].
- Research using the Millennium Cohort Study suggests that time and budget constraints are more serious among disadvantaged families, who may have less time to prepare meals and are less able to afford nutritious foods [7]. Researchers using ALSPAC data have found that this can extend to the choice to eat fast food [8].

3.3 Geography

- In the Millennium Cohort Study, an increased density of fast food outlets was associated with increased rates of overweight in children aged 10/11 years in 2011/12; however, this association disappeared after accounting for the confounding effect of deprivation. Deprivation is strongly associated with both density of fast food outlets and the odds of being overweight [9].
    - Furthermore, closer proximity to fast food outlets was associated with increased weight for children aged 7 to 14, but only among children whose mothers' education was below degree level [7].
    - Additionally, an increased number of fast food restaurants around children's schools was associated with increased BMI. A potential explanation is that, as students gain independence, the purchase of takeaway foods may occur on the school journey [7].
- Increased rurality has been associated with better dietary patterns, and lower snacking. Using data from ALSPAC, researchers found that children in rural households were more likely to consume healthier diets than those in urban households, even after adjustment for potential confounding factors [10].

3.4 Education

- In the 1958 National Child Development Survey, lower childhood IQ scores are associated with an increased prevalence of adult obesity at age 42, even after adjusting for other childhood characteristics [11].
    - Researchers suggest this may be because higher childhood IQ scores set in motion a chain of events that lead to a reduction in later life obesity risk: high IQ scores are associated with higher educational success in early adulthood, and subsequent occupational success in mid-life [11].
- Research using Understanding Society showed that British adults with self-reported intellectual impairments had higher rates of obesity and poorer nutrition than their non-disabled peers. However, a significant proportion of this may be attributable to their poorer living conditions [12].

3.5 Policy implications

- Tackling the higher rates of overweight or obesity in socioeconomically disadvantaged groups should be a priority for policymakers. Without effective intervention, researchers anticipate BMI inequalities to widen further throughout adulthood, with considerable public health and economic implications [5].
- Men, especially in middle-age, tend to be more overweight and obese than women. Alerting men to their BMI status and the health risks associated with this should be a priority [1].
    - Carrying excess weight is far more socially acceptable for men than for women. Findings indicate that overweight men are far less likely than overweight women to recognise that they are overweight and are therefore less likely to be attempting to lose weight [1].
    - This is especially concerning given that cardiovascular disease is the leading cause for men aged over 35, and overweight and poor diet are major risk factors [1].
- Strategies aimed at reducing overweight or obesity prevalence should focus on tackling education and the drivers of social inequalities.
    - For example, local government strategies aimed solely at restricting the location of fast food outlets may be ineffective, especially when they are not tackling the underlying social inequalities and household dynamics which are often key to patterns of excess body weight and unhealthy diets [9].
    - Mediating the influences of deprivation, such as by subsidising healthy foods in schools or shops, has been demonstrated to be effective elsewhere [9].
    - Findings suggest that interventions need to go beyond placing the responsibility on the individual, instead acting at the legislative and regulatory levels. For example, a systematic review of the impact of interventions for the promotion of healthy eating observed that policies based on taxation and subsidisation of foods were most likely to reduce inequalities in weight, as they improved healthy eating outcomes in people of lower socioeconomic position [13].
- The fact that healthier diets are found in rural areas suggests that interventions in Wales may have more impact in urban areas, where poorer-quality dietary patterns are more prevalent.
- Given the association of both maternal education and childhood IQ with obesity, interventions could usefully target educational levels within families.
    - It may be possible to alleviate the negative impact of less education and greater socioeconomic deprivation on diet through education about nutrition in schools, which are a means of engagement with children across demographics. This would be especially useful given the suggestion that children may begin to frequent fast food outlets on their way to or from school as they gain independence.

- Longitudinal researchers have investigated the potential impact of calorie-reduction and consumption interventions through statistical modelling and simulating interventions.
    - In simulations of universal interventions (i.e. not targeted at certain groups), decreases in obesity prevalence among children were greatest in the lowest maternal education group, but the percentage change was greatest in the highest maternal education group [14].
    - In simulations of interventions targeting children from highly deprived areas, obesity prevalence in the lowest maternal educational group was substantially reduced. Given the increasing inequalities in childhood obesity, policy interventions should target those children and families who are most socioeconomically disadvantaged [14].

4. Interventions in pregnancy and early childhood to promote good nutrition and prevent obesity

4.1 Pre-natal

- Research using data from the Southampton Women's Survey found that mother-offspring dietary trajectories were stable across early life, with poorer diet quality associated with maternal socio-demography and childhood body fat [15].
    - Diet quality remained stable from before pregnancy in the mother to age 8-9 years in the child, and a poorer diet quality was associated with a higher BMI in the mother [15].
    - ALSPAC research reinforces this, finding that the association between a mother and her child's body fat at age 17 was mainly driven by the direct effect of maternal pre-pregnancy overweight or obesity, and not through indirect effects of age at weaning or breastfeeding status [16].

4.2 Post-natal

- Having an overweight or obese mother has been associated with increased odds of the child being overweight or obese at 3.5 years old [17].
- Research using data from the Born in Bradford study found that food insecure mothers (i.e. those having trouble accessing or managing the quality of food) were more likely to be overweight at 12 months postpartum than those who were food secure. Food insecure mothers and children had dietary intakes of poorer quality, with fewer vegetables and higher consumption of sugar-sweetened drinks [18].
    - Researchers suggest that the stressful nature of food insecurity may affect changes in physiological responses, such as levels of cortisol, which may influence appetite and preferences for 'comfort foods' that are higher in fat and sugar [18].
- Children from overweight or obese mothers consume greater amounts of energy from non-core foods than children with healthy or underweight mothers. Non-core

foods are those considered excess to requirements for maintaining a healthy childhood diet, and are often consumed between meals as snacks [17].
    - 18-month-old children with healthy weight or underweight mothers consume higher amounts of fresh fruit than those with overweight or obese mothers [17].
- Some evidence suggests that introducing solid food earlier (at <3 months) may be a risk factor for the development of childhood obesity. In ALSPAC, mothers who were overweight or obese before pregnancy were more likely to introduce solid food to infants earlier than mothers with normal weight; however, an earlier age of weaning was not found to be an important driver of the association between maternal and offspring BMI [16].

4.3 Early childhood and life course implications

- Research based on the ALSPAC study found that children's diets during the preschool years saw a large increase in the intake of free (added) sugars, likely due to increased consumption of energy-dense nutrient-poor foods [2]. This increase in free sugar intake remained similar until adolescence.
- Growing Up in Scotland, a longitudinal population study following young people born in Scotland in 2004/05, found that children are more likely to be overweight or obese at age 10 years than age 6 years. By age 10 years, 34% of children were overweight including 19% who were obese. On average, BMI had increased by 2.5 BMI points for all children over the period from age 6 to 10 years [19].
    - 79% of children who were a healthy weight at age 6 years remained a healthy weight at age 10 years. However, around 12% became overweight and a further 8% became obese [19].
    - Children who were already overweight or obese at age 6 years were more likely to remain so or to see their BMI increase over the following four years than to see their BMI decrease. Amongst children who were overweight at age 6 years, 34% remained overweight and 33% became obese at age 10 years. Around 34% returned to a healthy weight [19].
    - Most children who were obese at age 6 years remained so at age 10 years (79%) [19].
- These trends found in Growing Up in Scotland are supported by evidence from ALSPAC which shows that children who were overweight or obese in early or mid-childhood were much more likely than normal-weight children to be obese as adolescents [2].
- Among cohorts born from 1946-1970, BMI tracks from childhood to adulthood more strongly at the higher end of the BMI distribution, meaning the risk of a heavy child being an adult who is overweight or obese is greater amongst children who are overweight or obese, particularly those at the extreme end of the distribution. This is concerning given the high prevalence of obesity in today's children, as it suggests a high proportion of children are likely to continue to be obese throughout life [13].

4.4 Policy implications

- It is clear that the preconception period is an important window to promote positive dietary changes in order to improve childhood outcomes. This is especially important to consider given that dietary behaviours track from childhood into adolescence and adulthood, meaning children with overweight mothers will have children more likely to develop overweight or obesity throughout the life course [15].
- World Health Organisation guidance recommending that complimentary solid food feedings begin no earlier than 6 months old should be promoted, as successive infant feeding surveys in the UK have shown that most children continue to be weaned before this age [16].
- More children in the UK are overweight or obese than in previous generations and, if observed trends in adulthood BMI continue, most children are likely to develop overweight or obesity at some point in their lives, and at younger ages than previous generations [20].
- Given that BMI tends to track all the way across life, interventions will be most effective when initiated as early as possible. For example, because a key factor predicting overweight or obesity at age 10 years was weight at age 6 years, addressing factors associated with early years weight and thus increasing the proportion of younger children of healthy weight would have a knock-on effect, reducing levels of overweight down the line [19].
    - Researchers using the Growing Up in Scotland study found that parental recognition of child overweight or obesity is poor, suggesting many parents are ill-informed or find it hard to recognise [19]. Interventions to reduce child weights would benefit from improving the understanding of parents and families in this regard.
- Specifically, researchers highlight the value of parental feeding interventions in tackling childhood obesity. These are particularly valuable given the importance of intervention early in the life course.
    - Researchers outside the longitudinal community have investigated parental feeding interventions using randomised control trials. One successful example is NOURISH RCT in Australia, which enrolled parents into a program of multiple interactive group sessions focusing on responsive feeding, how to respond to feeding problems, and how to maintain effective feeding strategies. Analyses of the trial data indicated that participation led to improve feeding behaviours [21].
    - Another Australian trial delivered a similar intervention online, with parents participating in an 11-week internet-based program. Results showed that the training led to improvement in nutrition for the child [22].

5. The relationship between obesity and mental health

5.1 Education

- Longitudinal research has identified that weight has complex and significant associations with educational outcomes.

- For the cohort born in 1958, no associations were found between overweight and obesity and educational outcomes. However, in the ALSPAC cohort born in 1991-92, a higher BMI led to worse academic outcomes [23]. This suggests that there might be a generational effect of overweight and obesity on educational outcomes.
    - For ALSPAC participants, higher BMI was associated with lower GCSE scores. This was found to be partly explained by depressive symptoms in girls and by bullying in boys, both of which have complex interrelationships with obesity [24].
    - Crucially, being overweight or obese at 16 years was not as detrimental for attainment if participants had been a healthy weight at age 11 years, suggesting it is long-term overweight and obesity that is the most problematic [25].

5.2 Eating disorders

- In ALSPAC, a higher BMI at 7 years old was found to be linked to higher levels of binge eating and overeating, and higher levels of binge eating and overeating at 13 years old were linked to higher BMI at 17 years old [26]. This supports the link between elevated BMI in childhood and disordered eating in later life.
    - Researchers also found that individuals with weight control and dietary restraint disorders were likely to gain more weight than those without such behaviours. This is concerning given higher BMI at 7 years old likely causes higher levels of weight-control behaviours in both boys and girls [26].

5.3 Policy implications

- Given the associations between a high BMI and poor educational outcomes, and their interactions with weight-related stigma, support for mental health and anti-bullying initiatives may help to alleviate the adverse social, mental health, and educational consequences experienced by young people with obesity [24].
- As with earlier sections, preventing the emergence of disordered eating in childhood is important and will reduce negative impacts later in life. It may also reduce the incidence of disordered eating habits developing as young people age into adolescence.

For more information on CLOSER and this submission, please contact Jay Dominy at j.dominy@ucl.ac.uk

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