

PROF AMELIA LAKE, TEESSIDE UNIVERSITY; AND FUSE - THE CENTRE FOR TRANSLATIONAL RESEARCH IN PUBLIC HEALTH – SUPPLEMENTARY WRITTEN EVIDENCE (FDO0141)

1. How does the prevalence of poor diet and obesity differ across population and demographic groups, and what are the reasons for disparities?

Context: A lot of evidence in this space. Emerging from a global pandemic and entering into a global cost-of-living crisis has had significant impacts on the wider food system and ultimately the food environment.

Definition Food insecurity has been defined as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Taylor & Loopstra, 2016).

Emergency food parcels (provided by food banks) are **nutritionally poor** and do not account for special dietary requirements (eg Diabetes)

Overview provided here: Lake, A. A., O'Malley, C., & Moore, H. J. (2022). Environmental drivers of obesity: Individual willpower versus societal responsibility. *Nutrition Bulletin*, 47(3), 277-281. <https://doi.org/10.1111/nbu.12574>

Also how to explore opportunities: Lake, A., Moore, H., Cotton, M., & O'Malley, C. (2023). Opportunities to improve population health: possibilities for healthier food environments. *Proceedings of the Nutrition Society*, 82(3), 264-271. <https://doi.org/10.1017/S0029665123002677>

Taylor, A. , & Loopstra, R. (2016). Too poor to eat food insecurity in the UK. Food Foundation. <https://enuf.org.uk/sites/default/files/resources/foodinsecuritybriefing-may-2016-final.pdf>

See **poor quality of food emergency** review: Oldroyd, L., Eskandari, F., Pratt, C., & Lake,

	<p>A. (2022). The Nutritional Quality of Food Parcels Provided by Foodbanks and the Effectiveness of Foodbanks at Reducing Food Insecurity in Developed Countries: A Mixed-Method Systematic Review\ <i>Journal of Human Nutrition and Dietetics</i>, 35(6), 1202-1229. https://doi.org/10.1111/jhn.12994</p>
<p><u>Cost of food</u> Food prices and affordability play an important role in influencing dietary choices, which in turn have implications for public health. With inflationary increases in the cost-of-living in the UK since 2021, understanding the dynamics of food prices becomes increasingly important. In this longitudinal study, we aimed to examine changes in food prices from 2013 to 2023 by food group and by food healthiness. We established a dataset spanning the years 2013–2023 by combining price data from the UK Consumer Price Index for food and beverage items with nutrient and food data from the UK nutrient databank and UK Department of Health & Social Care's National Diet and Nutrition Survey data. We calculated the price (£/100 kcal) for each food item by year as well as before and during the period of inflationary pressure, and classified items into food groups according to the UK Eatwell Guide and as either "more healthy" or "less healthy" using the UK nutrient profiling score model. In 2023, bread, rice, potatoes and pasta was cheapest (£0.12/100 kcal) and fruit and vegetables most expensive (£1.01/100 kcal). Less healthy food</p>	<p>Jody C. Hoenink, et al Changes in UK price disparities between healthy and less healthy foods over 10 years: An updated analysis with insights in the context of inflationary increases in the cost-of-living from 2021, <i>Appetite</i>, Volume 197,2024,https://doi.ounrg/10.1016/j.appet.2024.107290.</p>

was cheaper than more healthy food (£0.33/100 kcal versus £0.81/100 kcal). Before the inflationary pressure period (from 2013 to late 2021), the price of foods decreased by 3%. After this period, the price of food increased by 22%: relative increases were highest in the food group milk and dairy food (31%) and less healthy category (26%). While healthier foods saw smaller relative price increases since 2021, they remain more expensive, potentially exacerbating dietary inequalities. Policy responses should ensure food affordability and mitigate price disparities via, for example, healthy food subsidies.

- Between 2013 and 2023, food prices increased by 20% (£0.07/100 kcal).
- Before the inflationary pressure period from 2013 to 2021, food prices fell by 3%.
- During the inflationary pressure period from 2021 to 2023, food prices increased by 22%.
- Milk and dairy had the highest price increases, and fruit and vegetables the lowest.
- More healthy food had a higher absolute price rise, while less healthy food had a larger relative rise.

<p>The phrase severe mental illness (SMI) refers to people with psychological problems that are often so debilitating that their ability to engage in functional and occupational activities is severely impaired. Schizophrenia and bipolar disorder are often referred to as an SMI.</p> <p>About 1% of the population live with SMI</p>	<p>https://www.gov.uk/government/publications/severe-mental-illness-smi-physical-health-inequalities/severe-mental-illness-and-physical-health-inequalities-briefing</p>
<p><u>Obesity in people living with SMI</u></p> <p>Systematic review: When compared with the general population, people living with severe mental illness (SMI) are 1.8 times more likely to have obesity while in adult mental health secure units, rates of obesity are 20 % higher than the general population. In England, there are currently 490 000 people living with SMI. The aim of this systematic review was to collate and synthesise the available quantitative and qualitative evidence on a broad range of weight management interventions for adults living with SMI and overweight or obesity. Primary outcomes were reductions in BMI and body weight. Following sifting, eighteen papers were included in the final review, which detailed the results of nineteen different interventions; however, there was a lack of qualitative evidence. Pooled results for three studies (MD – 3.49, 95 % CI – 6.85, –0.13, $P = 0.04$) indicated a small effect in terms of body weight reduction but no effect on BMI</p>	<p>Stevens H, Smith J, Bussey L, et al. Weight management interventions for adults living with overweight or obesity and severe mental illness: a systematic review and meta-analysis. <i>British Journal of Nutrition</i>. 2023;130(3):536-552. doi:10.1017/S0007114522003403</p>

<p>for four studies (MD = 0.42, 95 % CI = 1.27, 0.44, $P = 0.34$). Key recommendations for future research included integration of qualitative methodology into experimental study design, a review of outcome measures and for study authors to follow standardised guidelines for reporting to facilitate complete and transparent reporting.</p>	
<p>Systematic review: aimed to identify and collate evidence on food insecurity in adults with SMI, in high- and upper-middle income countries. Sixteen publications were included (13 in the meta-analysis). The prevalence estimate of food insecurity in adults with SMI was 41% (95% CI: 29% to 53%, $I^2 = 99.9%$, $n = 13$). Adults with SMI were 3.31 (95% CI: 2.03 to 5.41) times more likely to experience food insecurity than comparators without SMI ($z = 6.29$, $p < .001$, $I^2 = 98.9%$, $n = 6$). Food insecurity appears to be a risk factor for developing SMI.</p> <p>This review suggests adults with SMI living in high- or upper-middle income countries are more likely to experience food insecurity than the general population and that this relationship may be inverse. Mental health practitioners should be aware of food insecurity and support individuals with SMI to access sufficient food.</p>	<p>Smith, J., Stevens, H., Lake, A. A., Teasdale, S., & Giles, E. L. (2024). Food insecurity in adults with severe mental illness: A systematic review with meta-analysis. <i>Journal of Psychiatric and Mental Health Nursing</i>, 31, 133–151. https://doi.org/10.1111/jpm.12969</p>

Peer research: Peer-led in-depth interviews were conducted with adults with severe mental illness from Northern England, during which their experiences of food insecurity and strategies to tackle food insecurity were discussed. Interviews took place between March and December 2022, with interviews being transcribed and analysed using deductive and inductive thematic analysis. Thirteen interviews were conducted, finding that food insecurity in adults with severe mental illness was often a long-standing issue. Unemployment, the cost-of-living crisis and fuel poverty impacted on experiences of food insecurity. Difficulties accessing food banks such as transport, stigma, and the limited selection of available food was also discussed. Strategies to tackle food insecurity centred on making food banks more accessible and improving the quality of available food. Future research should aim to **eradicate food insecurity for adults with severe mental illness**, as limited research and action focuses on this population group over and above 'mental illness' or 'poor mental health'. Removing barriers to accessing food such as lack of transport, and providing food which is of adequate nutritional quality, should be prioritised, as well as tackling the stigma and accessibility issues surrounding food banks use.

Giles, E.L., Eskandari, F., McGeechan, G., Scott, S., Lake, A.A., Teasdale, S. et al. (2023) Food insecurity in adults with severe mental illness living in Northern England: Peer research interview findings. *International Journal of Mental Health Nursing*, 00, 1–12.
<https://doi.org/10.1111/inm.13270>

Mixed methods study on Treat Culture: This study investigated staff views on patient weight gain, how it affects patients and how to better manage patient weight in this setting. Furthermore, the research explored the culture of food being used as a 'treat' and the perceived impact of 'treats' on weight. A two-phase mixed methods approach was taken to explore staff views on patient weight gain and the 'treat' culture on adult forensic secure care inpatient wards in one NHS Mental Health Trust in the north-east of England. Phase one was an online survey, and phase two consisted of semi-structured qualitative interviews. The quantitative survey data were analysed using descriptive statistics. Thematic analysis was used for the open-ended survey questions and interview data. The survey had 49 responses out of a possible 380 (13%). Ninety-two per cent of staff participants viewed patient weight gain as an area for concern, citing a range of reasons for weight gain. Weight gain was considered a risk to developing long-term health conditions and poor mental health. Nine participants were interviewed. Six themes were identified suggesting why patients might gain weight in forensic secure care, for example, patient history, staff behaviours, the surrounding 'treat' culture in this environment, along with suggestions of what could be improved to manage patient weight. People detained in forensic secure care may be more at risk of weight gain due to their history, the secure care environment and the 'treat' culture adopted in these environments.

Attala A, Smith J, Lake AA, Giles E. Investigating 'treat culture' in a secure care service: a study of inpatient NHS staff on their views and opinions on weight gain and treat giving for patients in a forensic secure care service. *J Hum Nutr Diet.* 2023; 36: 729–741.
<https://doi.org/10.1111/jhn.13129>

Mixed methods study: This coproduced study aimed to understand the experiences of adults with severe mental illness and food insecurity and strategies to help. 135 participants completed the survey (mean age 44.67 years [SD 14.1]). Participants were predominantly male (53%, n=72), white (87%, n=117), and from the Yorkshire region (50%, n=68). Overall, prevalence **of food insecurity was 50.4%** (n=68). Discussion across 13 interviews found food insecurity being a long-rooted experience, including familial and intergenerational experiences of food insecurity: "I grew up... with this insecurity around food" (P002). Recommendations for tackling food insecurity centred on food banks, increasing accessibility, and reducing stigma: "I would like to get more information on where the centres are..." (P006) and "I was referred to, erm, a foodbank ... but it's still the stigma that's attached to it." (P002). We found a higher prevalence of food insecurity in this study than in the general population (being 15%), yet limited research with adults with severe mental illness perpetuates food insecurity intergenerational injustices. Food insecurity should be eliminated. However, in the meanwhile, there should be widespread easy access to food banks offering nutritional foods. Limitations of this research include not reaching target sample size and a lack of ethnic diversity.

Use of co-production to explore food insecurity in adults with severe mental illness living in Northern England: a mixed-methods study

Giles, E., Eskandari, F., McGeechan, G., Scott, S., Whittaker, V., Robinson, J., Lynch, C., Moore, H., Lake, A. & Smith, J., 1 Nov 2023, In: Lancet. 402, Special issue 1, S44.

Cross-sectional survey: This study aimed to explore food insecurity prevalence and experiences of adults with severe mental illness living in Northern England. In total, 135 participants completed the survey, with a mean age of 44.7 years (SD: 14.1, range: 18–75 years). Participants were predominantly male (53.3%), white (88%) and from Yorkshire (50.4%). The food insecurity prevalence was 50.4% ($n = 68$). There was statistical significance in food insecurity status by region ($p = 0.001$); impacts of severe mental illness on activities of daily living ($p = 0.02$); and the Covid pandemic on food access ($p < 0.001$). The North West had the highest prevalence of food insecurity (73.3%); followed by the Humber and North East regions (66.7%); and Yorkshire (33.8%). In multivariable binary logistic regression, severe mental illness' impact on daily living was the only predictive variable for food insecurity (odds ratio = 4.618, 95% confidence interval: 1.071–19.924, $p = 0.04$). The prevalence of food insecurity in this study is higher than is reported in similar studies (41%). Mental health practitioners should routinely assess and monitor food insecurity in people living with severe mental illness. Further research should focus on food insecurity interventions in this population.

Smith J, Eskandari F, McGeechan GJ, et al. Food insecurity in adults with severe mental illness living in Northern England: A co-produced cross-sectional study. *Nutrition & Dietetics*. 2024; 1-14. doi:[10.1111/1747-0080.12868](https://doi.org/10.1111/1747-0080.12868)

Food Insecurity, maternal weight and diet in Pregnancy

Food insecurity is a well-established driver of obesity and poor nutrition. Less is known about food insecurity in pregnancy. This review (PROSPERO: CRD42022311669) aimed to explore associations between food insecurity in pregnancy and maternal obesity, gestational weight gain (GWG) and nutrition.

Accepted for Publication 27th March 2024 in Obesity Reviews:

Nguyen et al 'Food insecurity during pregnancy in high-income countries, and maternal weight and diet: a systematic review and meta-analysis'

Nguyen, G., Bell, Z., Andreae, G., Scott, S., Sermin-Reed, L., Lake, A., & Heslehurst, N. (2024). *Food insecurity during pregnancy in high-income countries, and maternal weight and diet: a systematic review and meta-analysis*. Obesity Reviews, Article e13753.

<https://doi.org/10.1111/obr.13753>

<p>Diabetes Knowledge of diabetes self-management for people newly diagnosed with type 2 diabetes, during or in the aftermath of the COVID-19 pandemic, is incomplete due to deferral of diabetes care due to the coronavirus infection or fear of contracting the virus (Tuttle, 2020).</p>	<p>Tuttle, K. R. 2020. Impact of the COVID-19 pandemic on clinical research. <i>Nat Rev Nephrol</i>, 16, 562-564.</p>
<p>The Diabetes UK (2023) 'Diabetes is Serious' report highlighted this backlog of care with one in three people with diabetes in the most deprived areas of England finding it difficult to contact their diabetes healthcare team in 2022 compared to one in four in the least deprived areas of England.</p>	<p>DUK. 2023. <i>Diabetes is serious</i> [Online]. https://www.diabetes.org.uk/get_involved/campaigning/diabetes-is-serious. [Accessed 12/3/2024].</p>
<p>The Diabetes UK (2023) 'The Hidden Cost' report revealed three in five people with diabetes have experienced stress and anxiety related to the current cost of living crisis, negatively impacting their mental health and making it harder to manage their diabetes. Sixty-six percent of people with diabetes have cut back or gone without food, while one in six people with diabetes have reduced or stopped spending on physical activities.</p>	<p>DUK. 2023. <i>The hidden cost</i> [Online]. https://www.diabetes.org.uk/get_involved/campaigning/cost-of-living-impacting-diabetes. [Accessed 12/3/2024].</p>

Ethnic minority groups

Systematic review: This study systematically reviewed the perceptions of dietary intake amongst Black, Asian and other minority ethnic groups in high-income countries. We identified eight major themes across this database: (1) "Social and Cultural Factors," (2) "Availability and Accessibility," (3) "Family and Community Influences," (4) "Food Preferences," (5) "Home Country Food Versus Host Country Food" (6) "Dietary Acculturation" (7) "Health and Healthy Eating" (8) "Perception of Nutritional Information." Overall, Black, Asian, and other minority ethnic groups individuals were found to be aware of the effects of unhealthy eating on their health, and some of them have nutritional knowledge, but social and cultural factors, including structural factors, were deterrents to their healthy eating behaviours. An important finding from this review is that some participants believed that nutritional information, based on bio-medical science, was intended for only White population groups and that it was antagonistic to their cultural and community well-being.

Ojo, A.S., Nnyanzi, L.A., Giles, E.L. *et al.* Perceptions of dietary intake amongst Black, Asian and other minority ethnic groups in high-income countries: a systematic review of qualitative literature. *BMC Nutr* **9**, 85 (2023). <https://doi.org/10.1186/s40795-023-00743-8>

Qualitative study: This study explored perceptions, beliefs, knowledge, and practices around dietary intake among communities with African and South Asian ethnicity residing in Medway, England. This qualitative study generated data from 18 adults aged 18 and above using a semi-structured interview guide. These participants were sampled using purposive and convenience sampling strategies. All the interviews were conducted in English over the telephone, and responses were thematically analysed. Six overarching themes were generated from the interview transcripts: eating patterns, social and cultural factors, food preferences and routines, accessibility and availability, health and healthy eating, and perceptions about the United Kingdom government's healthy eating resources. The results of this study indicate that strategies to **improve access** to healthy foods are required to improve healthy dietary practices among the study population. Such strategies could help address this group's structural and individual barriers to healthy dietary practices. In addition, developing a culturally responsive eating guide could also enhance the acceptability and utilisation of such resources among communities with ethnic diversity in England.

Ojo, A.S., Nnyanzi, L.A., Giles, E.L. *et al.* "I am not really into the government telling me what I need to eat": exploring dietary beliefs, knowledge, and practices among ethnically diverse communities in England. *BMC Public Health* **23**, 800 (2023).

<https://doi.org/10.1186/s12889-023-15689-6>

Children and wider context

Systematic review: Excess body weight and risky alcohol consumption are two of the greatest contributors to global disease. Alcohol use contributes directly and indirectly to weight gain. Health behaviours cluster in adolescence and track to adulthood. This review identified and synthesised qualitative research to provide insight into common underlying factors influencing alcohol use and unhealthy eating behaviours amongst young people aged 10–17. Sixty two studies met inclusion criteria. Twenty eight studies focused on alcohol; 34 focused on eating behaviours. Informed by principles of thematic analysis and meta-ethnography, analysis yielded five themes: (1) use of alcohol and unhealthy food to overcome personal problems; (2) unhealthy eating and alcohol use as fun experiences; (3) food, but not alcohol, choices are based on taste; (4) control and restraint; and (5) demonstrating identity through alcohol and food choices. **Young people faced pressure, reinforced by industry, to eat and drink in very specific ways, with clear social consequences if their attitudes or behaviour were deemed unacceptable.** No qualitative studies were identified with an explicit and concurrent focus on adolescent eating behaviours and alcohol consumption. Further exploratory work is needed to examine the links between food and alcohol in young people's emotional, social and

Scott, S.; Elamin, W.; Giles, E.L.; Hillier-Brown, F.; Byrnes, K.; Connor, N.; Newbury-Birch, D.; Ells, L. Socio-Ecological Influences on Adolescent (Aged 10–17) Alcohol Use and Unhealthy Eating Behaviours: A Systematic Review and Synthesis of Qualitative Studies. *Nutrients* **2019**, *11*, 1914.
<https://doi.org/10.3390/nu11081914>

<p>cultural lives.</p>	
------------------------	--

2. What is the relationship between food insecurity, poor diet and obesity?

Systematic Review: The OR of 36,113 cases in 24 studies (adults & children) was pooled together for the meta-analysis. These studies used a cross-sectional approach & one cohort study. Meta-analysis showed an overall small but statistically significant association between food insecurity and obesity (OR: 1.503, 95% CI: 1.432–1.577, p- value= .000) when all ORs were combined with the random-effects model.

Individuals (adults and children) experiencing food insecurity were one and a half times more likely to be affected by obesity.

Eskandari, F., Lake, A., et al (2022). A mixed-method systematic review and meta-analysis of the influences of food environments and food insecurity on obesity in high-income countries. *Food Science and Nutrition*, 10(11), 3689-3723. <https://doi.org/10.1002/fsn3.2969>

A geographical Mapping Case Study in Middlesbrough:

An analysis of the concentration of convenience and instant food outlets (defined as 'Food ordered at till, food predominately pre-prepared and held at temperature but can be prepared on-ordering. Food for takeaway or immediate consumption only, including takeaway/sandwich mobile caterer') in Middlesbrough by ward was conducted. As such, the rate per 100,000 population was included to facilitate a comparison with the nation average rate of 96.1 per 100,000 calculated in 2017. Eight wards

Eskandari, F., Lake, A., & Butler, M. (2022). Type and density of food environment in an area of high deprivation and high childhood obesity: a geographical mapping study. Abstract from the UK Congress on Obesity 2022, Lancaster, United Kingdom. (Paper is under preparation)

Comment [LA]: @Eskandari, Fatemeh what other evidence from your case-study in Middlesbrough

Comment [LA]: With this OR can we say 50% of people living with obesity were more likely to be living with food insecurity???

Comment [EF]: Regarding this OR, I'm afraid it is better to say: 'People living with food insecurity were one and half times more likely to be affected by obesity'.

(out of twenty) had a concentration of food takeaways that exceeded the latest national average ratio that was estimated in 2017.

Mapping and overlaying of data indicated that many of the areas across Middlesbrough with high convenience and instant food outlet concentration were also those where prevalence of child obesity and the level of deprivation were highest, showing a potential correlation. However, further work could establish this correlation. These findings are consistent with other studies in the UK and USA that show there is a positive association between density of takeaway outlets and deprivation, with more deprived areas having more fast-food outlets. Within 400 m radius buffer distance from both primary and secondary schools, different types of takeaway outlets were accessible especially in the most deprived wards of Middlesbrough. The findings also revealed the availability of fast-food outlets within 500 m, 800m and 1,000 m radius of both primary and secondary schools in different wards of Middlesbrough which have the highest prevalence of childhood obesity and index of multiple deprivation. This finding might support implementing a larger buffer zone of 800 m (10 min walk) or even 1,000 meters around schools to gain maximum benefit from this type of policy that could further decrease visits to takeaway food outlets by young people.

Geocoding of non-profit social supermarkets (i.e.,

social enterprises aimed at tackling food poverty in the UK) and food banks in the study area showed that these institutions were more concentrated in areas with the highest prevalence of childhood obesity both for Year 6 and Reception students. These food outlets were also found to be densely located on wards with the highest Index of Multiple Deprivation, showing a potential association between food insecurity and risks of childhood obesity.

3. How do inequalities in diet and obesity affect health outcomes?

What role does the food environment play in these inequalities?

The first 1,000 days - where maternal nutrition and early feeding may impact gene expression 'epigenetic changes', in the prevention of the development of the disease and comorbidities i.e., type 2 diabetes, certain cancers and heart disease (Verducci *et al*, 2022).

A cause of childhood health conditions including respiratory, bone and joint issues, sleep apnea and quicker onset of heart disease and type 2 diabetes, obesity development begins before birth...(OHID,2021).

Widely acknowledged that childhood obesity cannot be solved through single interventions and policies, and that changes at every level of the system are required, yet the evidence shows most money spent on single interventions – poor focus on systems approaches so far at local authority level in England (James Nobles work – Leeds Beckett)

The 0–5 age has been identified as a key life stage to target in obesity prevention efforts (Field, 2010, The Foundation years: preventing poor children becoming poor adults. HM Government) and that the development of health behaviours which influence

Powerful research shared with maternity and family hub teams

The first 1,000 days - where **maternal nutrition** and **early feeding** may impact gene expression 'epigenetic changes', in the prevention of the development of the disease and comorbidities (Verducci *et al*, 2022).

Michael Marmot – Stunting growth of children (height differences) recorded in low/no income families [The Broken Plate 2023 | Food Foundation](#)

<p>obesity can be influenced by parental habits, behaviours and the home environment from early years (Hayter AKM, et al 2015).</p>	
<p>The Kings Fund reported in 2022 that the 2020/2021 period saw rising rates of deprivation and obesity across England, in step with growing inequality between the least and the most deprived populations: the gap grew by 1.5 percentage points (from 16.1% in 2019/2020 to 17.6% in 2020/2021).</p>	<p>Holmes J (2022) Obesity, deprivation and Covid-19: why rowing back on the obesity strategy could prove to be a costly error: The Kings Fund.</p>
<p>A healthy diet helps to protect against malnutrition in all its forms, and reduces the risks of multiple noncommunicable diseases.</p>	<p>WHO (2020) Healthy diet. https://www.who.int/news-room/fact-sheets/detail/healthy-diet (accessed 17/11/2022)</p>

<p>People who live in more deprived areas find it harder to consume a healthy diet for a multitude of reasons, though the rising cost of healthy food is a significant factor for many. A report in 2018 by the Food Foundation showed that for anyone in the lowest income decile trying to follow the Eatwell Guide would cost them almost 30% of their disposable income. This does not account for the current cost-of-living-crisis within food and energy consumption – a crisis that compounds food insecurity risks.</p>	<p>Scott C, Sutherland J, Taylor A (2018) <i>Affordability of the UK's Eatwell Guide</i>. UK: The Food Foundation.</p>
<p>Additionally, households at risk are likely to be those who self-identify as “too rich to be poor” and who are experiencing in-work poverty.</p>	<p>Poulter H, Eberhardt J, Moore H <i>et al.</i> (2022) “Bottom of the Pile”: Health Behaviors within the Context of In-work Poverty in North East England. <i>Journal of Poverty</i>, 1-20.</p>

<p>The issue of the Toxic High Street</p> <p>Glasgow: a greater number of outlet clusters located within more deprived areas; all outlets (combined), alcohol outlets, fast food outlets, and tobacco outlets were clustered within the most deprived areas.</p> <p>For all outlets combined, cluster numbers increased with increasing deprivation.</p>	<p>Macdonald, L. et al Do 'environmental bads' such as alcohol, fast food, tobacco, and gambling outlets cluster and co-locate in more deprived areas in Glasgow City, Scotland?, <i>Health & Place</i>, Volume 51, 2018, https://doi.org/10.1016/j.healthplace.2018.04.008.</p>
<p>A recent systematic review and meta-analysis of 36,113 adults and children showed statistically significant associations between food insecurity and obesity (OR: 1.503, 95% confidence interval: 1.432 – 1.577, $P < 0.05$); highlighting that food insecurity increased risk of obesity among adults and children. This comprehensive systematic review confirms that obesogenic food environments and food insecurity significantly contribute to obesity, adding to existing evidence that cheap energy-dense foods are favoured over healthier foods, notably fruits and vegetables.</p>	<p>Eskandari F, Lake AA, Rose K <i>et al.</i> (2022) A mixed-method systematic review and meta-analysis of the influences of food environments and food insecurity on obesity in high-income countries. <i>Food Science and Nutrition</i> 10, 3689-3723.</p>

<p>In England, there is a strong correlation between a higher number of fast-food outlets in more deprived areas.</p>	<p>Public Health England (2018) Obesity and the environment: density of fast food outlets. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/741555/Fast_Food_map.pdf (accessed 17/11/2022)</p>
<p>It has also been demonstrated that deprived areas have more takeaway food outlets close to schools</p>	<p>Blow J, Gregg R, Davies I <i>et al.</i> (2019) Type and density of independent takeaway outlets: a geographical mapping study in a low socioeconomic ward, Manchester. <i>BMJ Open</i> 9, e023554.</p>
<p>as well as having an increased amount of bus shelter advertising of unhealthy food and drinks. Evidence of clustering of unhealthy advertising in poor areas.</p>	<p>Finlay AH, Lloyd S, Lake A <i>et al.</i> (2022) An analysis of food and beverage advertising on bus shelters in a deprived area of Northern England. <i>Public Health Nutrition</i> 25, 1989–2000.</p>

<p>Unhealthy advertising in Liverpool: distinct geographical clustering of advertisements particularly with greater amounts of unhealthy advertisements in deprived areas and student populations.</p>	<p>Palmer, G., Green, M., Boyland, E. et al. A deep learning approach to identify unhealthy advertisements in street view images. <i>Sci Rep</i> 11, 4884 (2021). https://doi.org/10.1038/s41598-021-84572-4</p>
<p>Do 'environmental bads' such as alcohol, fast food, tobacco, and gambling outlets cluster and co-locate in more deprived areas in Glasgow City, Scotland?</p> <p>For all categories of outlets combined, numbers of clusters increased linearly from the least to the most income deprived areas (i.e. one cluster within the least deprived quintile to ten within the most deprived quintile).</p>	<p>https://doi.org/10.1016/j.healthplace.2018.04.008.</p>
<p><u>Lived experience narrative</u></p> <p>What is known on the subject</p> <p>Peer research methodologies and methods are increasingly used in research, particularly to benefit from lived experiences.</p>	<p>McGeechan, G. J., Moore, H., Le Sauvage, N., Smith, J., & Giles, E. L. (2024). Considerations for peer research and implications for mental health professionals: learning from research on food insecurity and severe mental illness. <i>Journal of Psychiatric and Mental Health Nursing</i>, 00, 1–6. https://doi.org/10.1111/jpm.13050</p>

The experiences of peer researchers with severe mental illness are less common, including the impact on them of conducting peer-led research.

What the paper adds to existing knowledge

This paper shares the experience of peer research and suggests in the context of food insecurity, that it is not well understood by some healthcare professionals.

What are the implications for practice

Implications include considerations around trauma-informed care and the need for screening for food insecurity in mental healthcare settings. Research implications include providing training for peer research and needing to consider longevity of peer researcher relationships.

4. What are the main drivers of food poverty and inequalities in diet?

Across the UK, more than 1 in 4 households experience food insecurity resulting in going hungry, skipping meals and not eating for one whole day.

Food insecurity is highest in the North East of England compared with the rest of the UK, and women are more likely to experience food insecurity than men.

Poverty is food poverty– if people are experiencing poverty, they are experiencing food poverty as food budget is the one they have complete autonomy over.

- Access to food - correlation between food deserts/ swamps and wards with highest deprivation levels. Access to affordable, good quality food (*"it is not the price of carrots that is the issue, it is the £5 it costs to get to the shop and back"*)
- Correlation between food poverty and density of hot food takeaways.
- Food poverty and fuel poverty = poverty
- Education/ knowledge/ skills to cook, not having access to cooking equipment, utensils, basic store cupboard ingredients.

Cost of living

Lack of local authority funding

Access and affordability of health options

Geography

Food insecurity exists when someone struggles to afford or access enough food.

Nutritionally poor food parcels

Background: Research indicates that food parcels provided by food banks are nutritionally poor. Food insecurity and the use of food banks are both rising, with detrimental effects on the dietary intake and health of users. This mixed-method systematic review aims to investigate the current nutritional adequacy of pre-packaged food parcels and whether using food banks reduces the food insecurity and improves the dietary intake of their users. Methods: A mixed-method systematic literature review, restricted to articles published from 2015, was conducted using eight electronic databases, four grey literature databases and eight relevant websites. Quantitative findings, investigating the nutritional quality of food parcels and/or their impact on dietary intake or food insecurity, were presented narratively. Qualitative findings reporting the views of food bank users regarding food from food banks underwent thematic synthesis. These independent syntheses were integrated using configurative analysis and presented narratively. Results: Of 2189

Oldroyd, L., Eskandari, F., Pratt, C., & Lake, A. (2022). The Nutritional Quality of Food Parcels Provided by Foodbanks and the Effectiveness of Foodbanks at Reducing Food Insecurity in Developed Countries: A Mixed-Method Systematic Review. *Journal of Human Nutrition and Dietetics*, 35(6), 1202-1229. <https://doi.org/10.1111/jhn.12994>

articles, 11 quantitative and 10 qualitative were included. Food parcels were inconsistent at meeting nutritional requirements and often failed to meet individual needs, including cultural and health preferences. Using food banks improved food security and dietary quality of users, allowing otherwise unachievable access to food. However, food insecurity remained, and is explained by limited food variety, quality and choice. The mixed-method findings support interventions to ensure consistent, adequate nutrition at food banks, including catering for individual needs. Conclusions: Food banks are a lifeline for those severely food insecure. However when used alone, food banks struggle to eliminate the heightened food insecurity of their users. Efforts to improve the nutritional quality of food parcels could improve the experiences and diet-related outcomes of those requiring food banks.

5. How effective are current local and national approaches to reducing inequalities in diet and obesity and preventing associated health outcomes?

There are planning policy tools that can be used!
We need clearer planning policy and clear wording in the National Planning Policy Framework to support colleagues as they challenge appeals.
See our research around planning and the appeals process.

I suggest speaking with Mr Michael Chang (OHID) Planning and Health specialist who has many years of experience as well as policy experience.

Local Planning: In England there are three main types of planning policy used to promote a healthy food environment: 1) restricting new outlets near schools; 2) restricting new outlets if the density of existing outlets has surpassed a certain threshold of all retail outlets, 3) restricting new outlets if childhood obesity rates are above a certain threshold.

Results show a reduction in density of fast-food outlets by -17.50 and a 11% decrease in the proportion of fast-food outlets in Gateshead compared to other similar local authorities in the North East.

O'Malley, C., Lake, A., Moore, H., Gray, N., Bradford, C., Petrokofsky, C., Papadaki, A., Spence, S., Lloyd, S., Chang, M., & Townshend, T. (2023). Regulatory mechanisms to create healthier environments: Planning appeals and hot food takeaways in England. *Perspectives in Public Health*. Advance online publication. <https://doi.org/full/10.1177/17579139231187492>, <https://doi.org/10.1177/17579139231187492>

<https://sphr.nihr.ac.uk/wp-content/uploads/2023/11/Research-Briefing-OMally-Regulatory-mechanisms-hot-food-takeaways.pdf>

Also see these recent publications:

Bradford, C.P.J., O'Malley, C.L., Moore, H.J., Gray, N., Townshend, T.G., Chang, M. et al. (2024) 'Acceleration' of the food delivery marketplace: Perspectives of local authority professionals in the North-East of England on temporary COVID regulations. *Nutrition Bulletin*, 00, 1–9. <https://doi.org/10.1111/nbu.12672>

Moore H, Lake A, O'Malley C, et al. The impact of COVID-19 on the hot food takeaway planning regulatory environment: perspectives of local authority professionals

<p>These results suggest that a multi-pronged planning approach can significantly change the food environment in the short term (4 years).</p>	<p>in the North East of England. <i>Perspectives in Public Health</i>. 2024;144(1):52-60. doi:10.1177/17579139221106343</p> <p>See also https://fuseopenscienceblog.blogspot.com/2022/08/how-covid-19-changed-takeaway-landscape.html</p> <p>Brown, H., et al (2022). "No new fast-food outlets allowed! Evaluating the effect of planning policy on the local food environment in the North East of England". <i>Social Science and Medicine</i>, Article 115126. https://doi.org/10.1016/j.socscimed.2022.115126</p>
<p>Whole systems approaches – as discussed by Prof Wills</p> <p>Working with communities</p> <p>Scotland’s work emphasises the importance of engaging partners/everyone is part of the solution and leadership as essential in evaluation Relationships are most important/ Family hubs (From national Early years review) can support the food agenda if prioritised (Nutrition education, sensory/ cultivating taste preference/food familiarity from EY, Breastfeeding support etc.</p>	<p>WSA systematic review Bagnall et al 2019 Whole systems approaches to obesity and other complex public health challenges: a systematic review BMC Public Health (springer.com)</p> <p>Scotland Whole systems approach to diet and healthy weight: a longitudinal process evaluation in East Scotland - G Breslin, W Wills, C Bontoft, O Fakoya, H-A Greco, N Lloyd, AP Wagner, A Wellings, S Harding, KE Brown, 2023 (sagepub.com)</p>

<p>Although planning can be used to limit the proliferation of HFTs, decisions against a new HFT are subject to appeal.</p> <p>Defending such decisions on health grounds does not appear to lead to a successful defence.</p> <p>Public health professionals feel a need to 'state the obvious' at every appeal, that an over-proliferation of HFTs would be detrimental to the health of locals, and cause further health inequality.</p> <p>It was not uncommon for appeals to fall short due to a lack of capacity from PH professionals. Those new to the process were often surprised by the amount of time and effort required to defend a refusal.</p> <p>Planning professionals argue that planning policy is fundamentally about regulating land use and not about implementing public health policy.</p>	<p>O'Malley C, Lake A, Moore H, et al. Regulatory mechanisms to create healthier environments: planning appeals and hot food takeaways in England. <i>Perspectives in Public Health</i>. 2023;143(6):313-323. doi:10.1177/17579139231187492</p> <p>https://sphr.nihr.ac.uk/wp-content/uploads/2023/11/Research-Briefing-OMally-Regulatory-mechanisms-hot-food-takeaways.pdf</p>

<p>This is despite access to healthier food being a specific aim in the National Planning Policy Framework (NPPF)</p>	
<p><u>Advertising ban – effectiveness</u> SR of international evidence: Children from minority and socio-economically disadvantaged backgrounds are disproportionately exposed to unhealthy food advertising. Regulations to restrict unhealthy food advertising to children should be implemented to improve children's diets and reduce inequities in dietary intake. (Of the 25 articles included, 14 focused on exposure to unhealthy food advertising via television, nine via outdoor mediums and two via multiple mediums.)</p>	<p>Backholer K, et al. Differential exposure to, and potential impact of, unhealthy advertising to children by socio-economic and ethnic groups: A systematic review of the evidence. <i>Obesity Reviews</i>. 2021; 22:e13144. https://doi.org/10.1111/obr.13144</p>
<p><u>TfL advertising ban</u> Effective and has been evaluated as such. Restricting the advertisement of products with high fat, salt, and sugar (HFSS) content has been recommended as a policy tool to improve diet and tackle obesity, but the impact on HFSS purchasing is unknown. This study aimed to evaluate the impact of HFSS advertising restrictions, implemented across the London (UK) transport network in February 2019, on HFSS purchases. Methods and findings Over 5 million take-home food and drink purchases were recorded by 1,970 households (London [intervention], n = 977; North of England [control], n = 993) randomly selected from the Kantar Fast</p>	<p>Yau, A., Berger, N., Law, C., Cornelsen, L., Greener, R., Adams, J. M., Boyland, E. J., Devocht, F., Egan, M., Er, V., Lake, A., Lock, K., Mytton, O., Petticrew, M., Thompson, C., White, M., & Cummins, S. (2022). Changes in household food and drink purchases following restrictions on the advertisement of high fat, salt and sugar products across the Transport for London network: a controlled interrupted time series analysis. <i>PLoS Medicine</i>, 19(2), Article e1003915. https://doi.org/10.1371/journal.pmed.1003915</p>

Moving Consumer Goods panel. The intervention and control samples were similar in household characteristics but had small differences in main food shopper sex, socioeconomic position, and body mass index. Using a controlled interrupted time series design, we estimated average weekly household purchases of energy and nutrients from HFSS products in the post-intervention period (44 weeks) compared to a counterfactual constructed from the control and pre-intervention (36 weeks) series. Energy purchased from HFSS products was 6.7% (1,001.0 kcal, 95% CI 456.0 to 1,546.0) lower among intervention households compared to the counterfactual. Relative reductions in purchases of fat (57.9 g, 95% CI 22.1 to 93.7), saturated fat (26.4 g, 95% CI 12.4 to 40.4), and sugar (80.7 g, 95% CI 41.4 to 120.1) from HFSS products were also observed. Energy from chocolate and confectionery purchases was 19.4% (317.9 kcal, 95% CI 200.0 to 435.8) lower among intervention households than for the counterfactual, with corresponding relative reductions in fat (13.1 g, 95% CI 7.5 to 18.8), saturated fat (8.7 g, 95% CI 5.7 to 11.7), sugar (41.4 g, 95% CI 27.4 to 55.4), and salt (0.2 g, 95% CI 0.1 to 0.2) purchased from chocolate and confectionery. Relative reductions are in the context of secular increases in HFSS purchases in both the intervention and control areas, so the policy was associated with attenuated growth of HFSS purchases rather than absolute reduction in

HFSS purchases. Study limitations include the lack of out-of-home purchases in our analyses and not being able to assess the sustainability of observed changes beyond 44 weeks. Conclusions This study finds an association between the implementation of restrictions on outdoor HFSS advertising and relative reductions in energy, sugar, and fat purchased from HFSS products. These findings provide support for policies that restrict HFSS advertising as a tool to reduce purchases of HFSS products.

6. What are likely to be the most effective strategies for reducing inequalities in diet and obesity in the future? What evidence supports your proposals?

Whole systems approaches
Working with communities
Multi-component interventions

- Joined-up whole systems approach – long term programme of multiple initiatives happening concurrently covering range of aspects including: access to affordable, good food, cooking skills, access to cooking equipment/ utensils, workshops/ training, etc.
- Working with communities, communities at the heart of creating and delivering solutions.
- Tightening up planning to restrict prevalence of unhealthy food advertising and access.

Unhealthy advertising bans – following on from TfL evaluation.

The role of social supermarkets in addressing food insecurity

This research aims to produce learning about the voluntary community sector (VCS) roles and their response to food insecurity. This learning will enable scoping of the sector's longer-term position within

NIHR funded research

<https://research.tees.ac.uk/en/projects/community-social-supermarkets-understanding-how-they-shape-access>

<https://arc-nenc.nihr.ac.uk/the-22-projects-that-were->

<p>local health care systems, including the sector’s contribution to addressing inequalities in health.</p> <p><u>Scoping Review forthcoming</u> <u>Interviews forthcoming</u></p> <p><u>Peer researcher/public involvement forthcoming</u></p>	<p>funded-in-this-years-open-funding-competition/</p> <p>https://www.nihr.ac.uk/documents/increasing-accessibility-of-affordable-healthy-food-to-adults-living-with-severe-mental-illness-in-middlesbrough/33659</p>
<p>In work poverty</p> <p>A common theme for all participants with children, consisted of caregivers acting as “shock absorbers” to mitigate the health impact of IWP on their children, particularly in regard to eating behaviors: <i>I have been that poor [when] the kids have gone to their dad’s I have like not eaten [. . .] just so you know you’ve got enough for the next day if when they [children] come home, that’s how bad wages were. (Participant 1)</i></p> <p>Buying food for the household to ensure it would last was described as a complex task and a balancing act taking significant planning. A number of common strategies around buying food were acknowledged across the participants such as changing from fresh to frozen produce, shopping from the reduced section for higher-cost protein items, and batch cooking: <i>We buy stuff in the reduced section quite often and my partner is really good at finding food with deals</i></p>	<p>“Bottom of the Pile”: Health Behaviors within the Context of In-work Poverty in North East England Poulter, H., Eberhardt, J., Moore, H. & Windgassen, S., 22 Jan 2022, In: <u>Journal of Poverty</u>. 20 p.</p>

on, and [. . .] we make meals ahead of time and freeze them. (Participant 4)

Alongside immediate family trying to manage the impact of food poverty on children, in turn wider family networks such as participants' own parents tried to "shock absorb" the impact of food poverty for the whole family by cooking or providing food for the family. Interestingly, none of the participants reported ever visiting a food bank, and all identified that support from family had helped prevent this, although if they were without family, they would have no choice but to access food banks.

Use of Food Tax/ Food Levy

As discussed in the oral session. Dr Penny Breeze (Sheffield) has submitted evidence.

HEALTHEI -

<https://fundingawards.nihr.ac.uk/award/NIHR133887>

FINCH -

<https://fundingawards.nihr.ac.uk/award/NIHR133974>

COPPER -

<https://fundingawards.nihr.ac.uk/award/NIHR133887>

Interventions – Emotional Eating

Systematic review: Objectives: To synthesize evidence on the effectiveness of EE interventions for weight loss and EE in adults living with overweight or obesity. Methods: This is a systematic review and meta-analysis. Adhering to the PRISMA guidance, a comprehensive electronic search was completed up to February 2022. Random effects meta-analysis was carried out to determine the percentage change in weight and EE scores. Results: Thirty-four studies were included. The combined effect size for percentage weight change was -1.08% (95% CI: -1.66 to -0.49 , $I^2 = 64.65\%$, $n = 37$), once adjusted for publication bias. Similarly, the combined effect size for percentage change in EE was -2.37% , (95% CI: -3.76 to -0.99 , $I^2 = 87.77\%$, $n = 46$). Cognitive Behavioural Therapy showed the most promise for reducing weight and improving EE. Conclusions: Interventions to address EE showed promise in reducing EE and promoted a small amount of weight loss in adults living with overweight or obesity.

E-interventions and children

Systematic review: The aim of this systematic review and meta-analysis was to examine the effectiveness of e-health interventions for the treatment of children and adolescents with

Smith, J.; Ang, X.Q.; Giles, E.L.; Traviss-Turner, G. Emotional Eating Interventions for Adults Living with Overweight or Obesity: A Systematic Review and Meta-Analysis. *Int. J. Environ. Res. Public Health* **2023**, *20*, 2722. <https://doi.org/10.3390/ijerph20032722>

Azevedo LB, Stephenson J, Ells L, et al. The effectiveness of e-health interventions for the treatment of overweight or obesity in children and adolescents: A systematic review and meta-analysis. *Obesity Reviews*. 2022;

overweight or obesity. Databases were searched up to November 2020. Studies were randomized controlled trials where interventions were delivered via e-health (e.g., computers, tablets, and smartphones, but not phone calls). Studies should target the treatment of overweight or obesity in children or their agent of changes and report body mass index (BMI) or BMI z-score. A meta-analysis using a random-effects model was conducted. Nineteen studies met the inclusion criteria, and 60% were of high quality. The narrative review revealed variation in behavior change strategies and modes of delivery. The pooled mean reduction in BMI or BMI z-score showed evidence for a nonzero effect (standardized mean difference = -0.31 , 95% confidence interval -0.49 to -0.13), with moderately high heterogeneity between studies ($I^2 = 74\%$, $p < 0.001$). Subgroup analysis revealed high heterogeneity in studies with a high or unclear risk of bias. E-health interventions can be effective in treating children and adolescents with overweight and obesity and should be considered by practitioners and policymakers. However, an understanding of the most effective and acceptable intervention components, long-term benefits, and sustainability should be further studied.

23(2):e13373. doi:[10.1111/obr.13373](https://doi.org/10.1111/obr.13373)

Energy Drinks

Summary of Fuse research:
<https://www.fuse.ac.uk/research/impactonpublichealthpracticepolicy/energydrinksandyoungpeopleshealth.html>

Policy brief from our most recent academic paper:

<https://t.co/cPzRbAcoHP>

Jan 2024 evidence review:

Ajibo, C., Van griethuysen, A., Visram, S., & Lake, A. A. (2024). Consumption of energy drinks by children and young people: a systematic review examining evidence of physical effects and consumer attitudes. *Public Health*.

<https://doi.org/10.1016/j.puhe.2023.08.024>

<https://www.sciencedirect.com/science/article/pii/S0033350623003189?via%3Dihub>

19 April 2024