Title:

“We go hunting…”: Understanding experiences of people living with obesity and food insecurity when shopping for food in the supermarket to meet their weight related goals

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Abstract

The high prevalence of food insecurity in the United Kingdom has been exacerbated by the cost-of-living crisis. In high-income countries, those experiencing food insecurity struggle to buy and consume foods that meet Government healthy eating recommendations, and are at increased risk of obesity, linked to poor diet quality. Individuals in high-income countries purchase most of their food to consume at home from supermarkets, making this an important context within which healthier and environmentally sustainable food purchasing should be supported. However, the lived experience of supermarket food purchasing in people living with obesity and food insecurity has not been explored in depth. Adults, living in England and Scotland, who self-identified as living with obesity and food insecurity and looking to reduce their weight, were recruited to take part in semi-structured interviews (n = 25) or focus groups (n = 8) to explore their experience of shopping for food in the supermarket. Using thematic analysis, four main themes were generated: 1) the *Conscious Consumer*; decision making and effortful practices both in preparation of and during the shopping trip, 2) the *Restricted Consumer*; restrictions around the type of food purchased, where food can be purchased and the resulting emotional toll, 3) *Mitigating the Rising Cost of Food*; agency and actions taken to mitigate high food prices, 4) *Stigma*; instances of perceived and/ or experienced weight and poverty-related stigma and the physical actions and cognitive social comparisons used to minimise stigma. Findings provide insights for evidence-based policy on the need for upstream changes within the wider food system to address the social determinants of health and support people living with obesity and food insecurity to eat healthier and more sustainable diets.

Key Words: food insecurity, obesity, supermarkets, lived experience, cost-of-living, health inequalities

1. Introduction

The growing number of individuals reporting that they are experiencing food insecurity in the United Kingdom indicates a public health crisis, which remains poorly understood and under conceptualised (Power et al., 2023). Food insecurity, defined as the 'limited or uncertain availability of nutritionally adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways' (Anderson, 1990), is generally acknowledged to be an indication of insufficient household income in high-income countries (Loopstra & Tarasuk, 2013; Penne & Goedemé, 2021). Within the UK, over the last decade, this phenomenon has been associated with wage stagnation and Government austerity policy (Jenkins et al., 2021) and has been further exacerbated by the recent cost-of-living crisis (Stone et al., 2024). In 2024, the Food Foundation estimated that 15% of UK households were experiencing food insecurity, with people living on low incomes, recipients of Government assistance (such as Universal Credit), households with children, and individuals from minority ethnic backgrounds at an increased risk (Hadfield-Spoor et al., 2022; O'Connell et al., 2019; Jolly & Thompson, 2023). Additionally, households including an adult limited by a disability or ill health are over three times more likely to be food insecure than households with adults who are not limited (The Food Foundation, 2024). At the same time, food insecurity has also been associated with an increased risk of obesity in high-income countries (Aggarwal et al., 2011; Franklin et al., 2012) and is also considered a risk factor for Type 2 diabetes (Essien, Shahid, & Berkowitz, 2016; Gucciardi et al., 2019).

In high-income countries, such as the UK, obesity is socially patterned with adults living in the most deprived circumstances more likely to live with obesity compared to their more affluent counterparts. In Scotland, 40% of people in the most deprived areas are living with obesity compared to 18% of people in the least deprived, whilst in England, this pattern is 34%, compared to 20% (Scottish Government, 2020; NHS Digital, 2022). One potential explanation of this obesity-food insecurity paradox is that nutritionally poor, energy-dense foods are cheaper (per kilocalorie) and more readily available than healthier alternatives

(Dhurandhar, 2016; Drewnowski, 2009; The Food Foundation, 2023a). While foods, high in fat, salt and sugar may become a sensible economic choice for individuals living on a lower income, regular consumption can be problematic for maintaining a healthy body weight (Drewnowski, 2009; Eskandari et al., 2020). Obesity levels in the UK represent a key public health issue, however, public policies aimed at addressing this have faced criticism for ignoring the wider determinants of health, placing the onus for change on the individual (Adams et al., 2016; Theis & White, 2021). Such an approach assumes the individual possesses the required material resources, i.e., sufficient food budget, facilities and equipment for food preparation and cooking and psychological resources; motivation and wellbeing, which is often not the case (Adams et al., 2016; Theis & White, 2021). Given that the most deprived fifth of UK households would need to spend 50% of their disposable income to eat in line with Government recommendations associated with healthy eating, such as the Eatwell guide, compared to the 11% of disposable income needed by least deprived fifth of the population (The Food Foundation, 2023a), there is a clear inequity faced by those on the lowest incomes in relation to weight management.

Thinking about food purchasing as the antecedent to food consumption practices, it is notable that people living in high-income countries, including the UK and USA, tend to purchase most of their food from supermarkets (both in-store or online) (Drewnowski & Rehm, 2013; Foreman & Lomas, 2021). Therefore, supermarket promotions, advertising, and product placement decisions could provide a context within the wider food system through which healthier eating could be supported (Lonnie et al., 2023).

While what we eat is shaped by the world in which we live, the foods we buy and consume have an impact on the world around us. The current food system accounts for 34% of greenhouse gas (GHG) emissions, 70% of all human water use, and is the lead cause of deforestation, pollution, and biodiversity loss (Crippa et al., 2021). Therefore, it is recommended that any diets promoted or prescribed are sustainable and “promote all dimensions of individuals’ health and wellbeing; have low environmental pressure and impact, taking into account factors including GHG emissions, water consumption, and land use; are accessible, affordable, safe and equitable; and are culturally acceptable” (World Health Organisation, 2019). At the same time, adherence to Government recommendations (i.e., the Eatwell Guide) is said to not only benefit human health but could also reduce an individual’s environmental footprint through

associated reductions in GHG emission (Scheelbeek et al., 2020; The Carbon Trust, 2016). Consequently, interventions aimed at improving dietary quality, may also have the potential to reduce the environmental footprint of household food purchasing and consequent intake.

This research was funded as part of the FIO Food project, which aims to support environmentally sustainable and healthier food choices in the UK food system (Lonnie et al., 2023). The project aims to better understand and characterise the experiences of people living with obesity and food insecurity when shopping in a supermarket environment (in-store or online). The current study was broadly designed to expand on and help contextualise the findings of an associated quantitative study of 583 people living with obesity and food insecurity (Stone at al., 2023; Stone et al., 2024). Stone et al. (2023) found that food insecurity was associated with barriers from the food environment (e.g., price), food preparation practices, poorer mental health, stigma of being food insecure, lower healthy diet knowledge, and physical ill-health. Moreover, poorer mental health and experiences of stigma from being food insecure were associated with poorer diet quality. Stone et al. (2024) also observed that being more adversely impacted by the cost-of-living crisis was associated with experiences of food insecurity, and in turn, those experiences of food insecurity were associated with the use of specific food preparation practices (i.e., use of energy-saving appliances, use of resourcefulness) and food purchasing behaviours (i.e., use of budgeting, use of supermarket offers). In the current study, we sought to uncover the influences surrounding purchasing decisions of people living with obesity and food insecurity, who were looking to reduce or manage their weight, when shopping for healthy, sustainable food in the supermarket, and to explore, in depth, the ways in which they attempted to navigate the rising cost of food during the cost-of-living crisis.

2. Methods and materials

2.1 Participants

Individuals who self-identified as living with obesity and food insecurity, were aged 18 and over, and were intending to reduce or were actively reducing their weight were recruited for the study. Maximum variation sampling was used to identify our sample as we aimed to recruit a broad and diverse range of views and experiences from individuals of different genders, ethnicities, household status (i.e., households with children, adults living alone), and age. Most

participants (n = 21) were recruited after expressing an interest following participation in the aforementioned linked quantitative survey study, where participants were recruited using the participant recruitment website, Prolific (www.prolific.com) (Stone et al., 2024). Participants were also recruited following an online press release and social media posts (n = 3) and through a food bank in Aberdeen, Scotland (n = 8) (Figure 1). Those interested in participating were provided with the participant information sheet which described the aims of the research, outlined what would happen should they agree to take part, and detailed their right to withdraw. Potential participants were also asked to complete a brief screening questionnaire to assess their eligibility. The screening questionnaire included a 2-item food insecurity screener (Hager et al., 2010), and asked participants to self-report their height and weight, from which body mass index (BMI) was calculated. Eligible participants were invited to take part in an online or telephone interview. Participants recruited through the food bank were offered the opportunity to meet online, by phone or take part in an in-person focus group discussion at the food bank premises. Recorded verbal or written consent to participate was sought from all eligible participants prior to any interview or focus group commencing. Data collection continued until data saturation was reached (Saldana, 2016). Ethical approval for the study was sought and obtained from the Robert Gordon University School of Nursing, Midwifery and Paramedic Practice School Ethics Review Panel (SERP reference number 23-02, approved on 26th May 2023).

INSERT FIGURE 1 HERE

Fig. 1: Flow chart of participant recruitment

FI: food insecurity, LWO: living with obesity; n: number

2.2 Procedure

The brief screening questionnaire, which collected information including age, gender, ethnicity, intention or active engagement in weight reduction and health conditions, and the semi-structured topic guide (Supplementary data), were developed in collaboration with the FIO Food project Patient and Public Involvement (PPI) partners. Co-production of knowledge is a fundamental principle of the FIO Food project with PPI groups established from the start (Lonnie et al., 2023). Therefore, project PPI partners, individuals with lived experience of food insecurity and/ or obesity, recruited through the third sector,

an NHS weight management programme, and at a public engagement event, played an instrumental role in informing and guiding the development of this research. Our PPI partners provided guidance about the acceptability of recruitment strategies, the language used in study materials and communications and helped inform proposed screening and topic guide questions. The PPI group also helped interpret the data and explain the study findings within their wider knowledge and experience as recommended by Brett et al. (2014). The topic guide was used flexibly to steer the discussion but also allowed for follow-up questions on areas of interest and for themes or subthemes to emerge (around which we have no preconceived notions) (Karatsareas, 2022).

2.3 Data Collection

The individual interviews were conducted over Microsoft Teams, or by telephone depending on participants preference, and ranged in duration from 25-50 minutes. Focus group participants, recruited via the food bank took part in two consecutive occasions over a two-week period due to the time available for the discussion during the food bank session, and these discussions lasted 30 and 40 minutes, respectively. All participants received a £25 retail gift voucher as compensation for giving up their time and sharing experiences. Interviews and focus groups were conducted between June and December 2023. All interviews and focus groups were undertaken by one of the authors (EH) and audio recorded using a digital audio recorder (TASCAM DR-07X), transcribed verbatim by a University approved data transcription service, and the transcripts were anonymised. Field notes based on the interviewer’s observations (EH) and other notable and relevant information were generated.

2.4 Data Analysis

The transcripts and field notes were thematically analysed by two of the authors (EH and FD) following steps outlined by Braun and Clarke (2006); this process involved exploring and becoming familiar with the data (EH and FD), generating initial descriptive codes (EH), reviewing (FD) and discussing the codes (EH and FD). These data and descriptive codes were then reorganised based on relationships to form an initial set of themes (Saldana, 2016). Queries or differences of opinion on emerging codes and categories were sought and discussed with all authors through presentations and reflections on the data during routine research meetings. This process continued until the main theme

and subtheme labels were finalised. NVivo 13 software was used to manage and support data analyses.

Talk was viewed as reflecting the reality of participants' lived experience. Consideration was also given to the wider socio-ecological context within which this reality existed. By applying a socio-ecological lens, we explored not only the role and impact of individual agency but also the impact of interpersonal interactions and relationships, social and physical environments, Government policy, and culture on shopping for healthy food in the supermarket.

3. Results

3.1 Participant Characteristics

Of the 32 participants, most were female (71.9%, n = 23), White (65.6%, n = 21), aged between 35 and 54 years, with a median BMI of 35.5 kg/m^2. All participants resided in England or Scotland and indicated they had experienced food insecurity, either reporting they had been worried food would run out (65.6%; n = 21) or had experienced running out of food and not being able to afford to buy more (31.1%, n = 10), 1 participant preferred not to answer this question. Most participants reported their health as being good or fair (71.9%; n = 23), however, 25.0% (n = 8) stated their health was bad or very bad (1 participant provided no data). The majority of participants reported living with a health condition (68.8%, n = 23), with 56.3% (n = 18) living with two or more. Commonly reported conditions included Type 2 diabetes, high blood pressure, arthritis, and depression. Most participants not only shopped for themselves but were responsible for buying food for their children and/or their partner or spouse (65.6%, n = 21) and just over half the participants (53.1%, n = 17) reported they had been actively attempting to reduce their weight for the past six months or less. Further details are provided in Table 1.

Table 1.

Frequency table summarising participant demographic data, food purchasing responsibility, current dietary behaviour or plans

		N (%*)
Gender	Female	23 (71.9%)
	Male	9 (28.1%)

Age Range (years)	16-24	2 (6.3%)
	25-34	5 (15.6%)
	35-44	13 (40.6%)
	45-54	8 (25.0%)
	55-64	2 (6.3%)
	65+	2 (6.3%)
BMI (kg/m^2)	Median	35.5
	IQR	33.0; 43.1 kg/m^2
Ethnicity	White (British, Scottish, English, Irish)	19 (59.4%)
	White (other)	2 (6.3%)
	Black	4 (12.5%)
	White and Black African	1 (3.1%)
	White and Black Caribbean	3 (9.4%)
	Mixed/ multiple ethnicity	1 (3.1%)
	Asian	1 (3.1%)
	Pakistani	1 (3.1%)
Food purchasing responsibility	Themselves only	8 (25%)
	Themselves and their partner	6 (18.8%)
	Themselves and their child/ children	6 (18.8%)
	Themselves, their partner, and child/children	9 (28.1%)
	Themselves and parent/ guardian	2 (6.3%)
	Themselves and a friend	1 (3.1%)
Intending/ actively attempting weight reduction	Intending to reduce their weight in next 6 months	8 (25%)
	Intending to reduce their weight in next 30 days	3 (9.4%)
	Actively attempting to reduce their weight < 6 months	17 (53.1%)
	Actively attempting to reduce their weight > 6 months	4 (12.5%)

%: percentage, N, :number, BMI: body mass index, kg/m^2: kilograms per metre squared, IQR: interquartile range

*% reported may not add to 100% due to rounding up

3.2. Thematic Analysis

Our analysis of the data associated with participants' experiences and perspectives of shopping for food in a supermarket setting revealed four main themes and 13 associated sub-themes (Table 2).

Table 2.
Summary of themes and sub-themes

Theme	Sub theme
Conscious Consumer	Searching, planning and preparing
	In-depth knowledge of food prices
	Checking (and often ignoring) labels
Restricted Consumer	Healthy options off the table
	Shop where you can, not where you want
	Shopping sustainability: Past and present practices
	The emotional toll of restriction
Mitigating the Rising Cost of Food	Sacrificing quality, quantity and taste
	Maximising food shelf life
	Minimising cooking energy costs
Stigma: In store experiences	Weight stigma in store; can't do right for doing wrong
	Poverty-related stigma: anticipated and experienced
	Minimising stigma through action, agency and social comparisons

3.3 Conscious Consumer

When discussing their experiences of shopping for food in the supermarket, almost all participants indicated they were undertaking considerable conscious *information seeking and decision making* both in advance of and during their visit to the store. Participants' decisions around where to shop and what to buy were shaped by the use of websites and apps to get information on deals and promotions, as well as their *own extensive knowledge of food prices*. The nutritional information on food items guided the purchases of some participants, however, the majority reported an *inability to engage with this guidance* due to the high cost of healthier food items.

3.3.1 Searching, planning and preparing

In preparation for their shopping trip, participants discussed searching websites and apps for the best deals and prices of healthy food items, planning which recipes to cook and writing shopping lists, illustrated by this participant's quote:

> '*on Lidl, on the website they have like, erm, lists of foods that are discounted for that particular week like erm, like chickens and like apples, oranges, you know, broccoli, stuff like that. So, usually I try and like, make the shopping list and the recipe around those particular things that are gonna be discounted this week*.' (Participant 15, male, age range 25-35)

Consideration was also given to finding out which stores offered the cheapest prices on those intended food purchases, and calculations that deliberated transportation costs against any potential food purchase savings were factored into decisions about which stores to visit as this participant described here:

> '*we'll walk, walk there. We'll go around, we'll do the shop...we'll get, like, an Uber home...that's gonna be 8-9 quid to get home for that, so we have to make sure that the savings add up to that*'
> (Participant 18, male, age range 45-54)

3.3.2 In-depth knowledge of food prices

Most participants indicated that they had a detailed, in-depth knowledge of food prices, including healthy foods, and knew the cost of the same item across stores. This is exemplified in this quote where the participant explained that: '*sometimes for my own sanity I will go into Waitrose and look at the cheap stuff and get it. But you know, their sardines are 15p dearer than other places*', (Participant 08, female, aged 45-54). It was also evident that many talked about recent price increases or decreases of food items and could describe in detail promotional offers related to different products and any increased costs of foods they perceived as being healthier alternatives (i.e., lighter, or reduced calorie items). In this example the participant shares their observations about the price changes of courgettes: '*Like the other day, an example would be a courgette, it was £2 something a kilogram for courgettes, and I just think, that used to be like 30p a kilo, for like a courgette, you know*.' (Participant 35, female, age range 35-44)

In this next example the participant not only demonstrates knowledge of prices of different artificial sweeteners and their approach to minimizing the amount of

money they spend on this product, but indicates, at the same time, that they have made a conscious decision to spend more money on the cheapest low-calorie sweetener rather than buy the much cheaper, but higher calorie sugar product:

> '*if I want to stay on the healthy side of the sweetener then I go for the Stevia and erythritol but it's much more expensive. Like, I use this Truvia, it is a mix of Stevia and erythritol, and like 250g package is £4, you know. If you buy sugar, you get 1 kilo like £1 something, you know so, living and eating healthily is money consuming I believe*' (Participant 12, female, age range 45-54)

3.3.4 Checking (and often ignoring) labels

Nearly all participants talked about reading nutritional information on food packaging, mainly in relation to the traffic light food labelling system which reports colour coded information on high (red), medium (orange) or low (green) amounts of fat, salt, and sugar and calorie content on front of pack (https://www.food.gov.uk/safety-hygiene/check-the-label). Despite being conscious of this information, participants frequently discussed having to ignore this guidance due to their budgetary constraints. In this illustrative example, the participant talks about this tension and internal conflict by explaining:

> *'I try as much as possible to make um, the best possible choices... more often than not now I, I'm looking at the nutritional information and just kind of closing my eyes a little bit to what's on there. Which makes me feel pretty sad because I've always, I've always previously been quite on stuff like that but, um, and it's mattered but I find I'm still looking but then having to make, like turn a blind eye*' (Participant 11, female, age range 35-44)

This example also illustrates the emotional challenge of having to 'blind' oneself to the routine checking of food labels due to cost. This participant recounts the sadness they experience as this new way of behaving conflicts with their previous habits and desire to eat healthily. Emotional challenges are also discussed as a sub theme of the *Restricted Consumer*.

3.4 The Restricted Consumer

In many senses, this *Restricted Consumer* theme overlaps with the *Conscious Consumer* theme. Almost all our participants described the sets of practices they used as they prepared for and executed their shopping plans and activities. For some, those practices and beliefs appear to have been borne out of necessity in response to long-standing health and economic considerations. However, for many, recent shopping experiences were discussed as being more obviously impacted by significant levels of financial challenge over and above what they had experienced previously, and which they attributed to recent price rises. Participants described significant, additional restrictions about their ability to purchase healthy food with those being variously described as being *"off the table"* facing restrictions about *where and when they shopped*, *limiting their capacity* to follow through *on aspirations to shop sustainably*, all of which commonly invoked *negative emotional impacts*.

3.4.1 Healthy options off the table

Participants discussed facing restrictions around the types of food they were able to afford, often describing healthy foods to be off limits due to cost. Swapping their preferred healthy food for a less healthy alternative, was a strategy adopted by some to maintain the ability to consume the desired food despite their limited budget, illustrated in this example:

> '*sometimes I've gone to buy chicken and I, I've only got a £1.50 budget and I can't, the only chicken or turkey that I can get within that price range is a Bernard Matthew's turkey, breaded turkey escalope, do you know the ones I mean? They're like the flat one with the, so I could get two of them reduced from £1.99 to £1, so that's within my budget but it's nowhere near as healthy as just buying the plain chicken*' (Participant 54, female, age range 45-54)

The following example also illustrates the seeming cognitive dissonance and discomfort experienced by participants. Participants reported knowing that they were pursuing 'inferior' purchasing practices (in this case, purchasing foods they perceived to be less healthy) out of necessity, which did not align with their personal beliefs and values, and which they also perceived were harmful to their health:

'*High processed goods in supermarkets are always the cheapest and are pretty much what I live off of now. So I know I'm doing myself harm. I know it's not gonna make me any better. It's not gonna help me lose weight 'cause they're always high fat*' (Participant 02, female, age range 45-54)

3.4.2 Shop where you can, not where you want

Restrictions applied also in relation to the supermarket participants used. Participants described shopping in stores where they could maximise their budget, but often expressed a desire to shop in a store they perceived as selling better quality foods or which offered a more comfortable shopping experience. This participant describes having to mentally prepare themselves to go into a shopping environment that they perceive to be confusing, busy, and stressful, while preferring and reflecting on the pleasant and calm nature of more expensive supermarkets:

'*I find like Lidl and Aldi quite visually, erm, it's just quite a confusing experience...the checkouts tend to be a bit speedier and people seem to be a bit, maybe a bit more impatient in general...I sort of do a bit of an intake of breath before I go in to say the Lidls and Aldis ...of course if you walk into somewhere like a Waitrose, everything's displayed beautifully, the staff are so helpful and friendly, er, there's space to sort of breathe and actually look at stuff, so kind of, in a sensory way, the, the, the more expensive shops are obviously. I, it's they're beautifully air conditioned, it's, it, you know, it's a very, you notice it*' (Participant 11, female, age range 35-44)

3.4.3 Shopping sustainability: Past and present practices

We asked participants about their views, intentions, and practices related to shopping with notions of environmental sustainably in mind. It was noticeable that the concept of sustainability was something most people thought about, at some level. Those who described this concept in more depth, often reflected on and contrasted more positively their *past* 'sustainable' food purchasing decisions, that is, those decisions made and actioned prior to a change in financial circumstances precipitated by the cost-of-living crisis or unemployment. It was commonly reported that current sustainability intentions and practices were constrained by price. The following quote illustrates this, with the participant describing past and present sustainability intentions and practices as

distinctly different entities. This passage indicates that the participant had initially found the changes difficult to grapple with emotionally, but with each subsequent purchase that did not meet those previously held values and standards, it got easier, even though by doing so felt as though they were committing criminal acts:

> '*my circumstances have changed like in the last couple of years so, I, I kind of, I can almost see a line between how I used to think before and how I used to think now and a lot of that, you know, things like sustainability, making sure that was eating, um, eh, foods that came from sustainable sources and like you know, avoiding anything rainforest related at all, um, trying to eat locally organic if possible…it is ingrained in me to think of these things and to think about it but, absolutely I admit that I've picked up things in the last year that I wouldn't have done before because I feel that, that financially that's the option that I have and I have to make. And the more you do that the more you, you kind of, it becomes easier and easier to do it, almost like you're committing a little crime or something.*' (Participant 11, female, age range 35-44)

By contrast, while this next participant's quote illustrates the overriding cost issue being the primary determinant of whether purchasing decisions included or could include sustainability considerations, this individual seemed less emotionally troubled about this than the previous example, albeit they appeared to express regret about the fact that they were not able to pursue more sustainable purchasing practices:

> *'in terms of sustainability I couldn't give a monkeys unfortunately, at this time whether an apple's come from Spain or South Africa, it's the price.*' (Participant 08, female, age range 45-54)

3.4.4 The emotional toll of restriction

Negative emotional experiences have already featured in different ways in the aforementioned themes, and they are integral elements of them. However, the prevalence of the heaving emotional toll exacted by the experience of shopping on a very restricted income across participants' narratives, was obvious and so merits recognition as a distinct sub-theme. During the interviews it became apparent that restrictions around participants' ability to afford healthy, sustainable foods, and shop in the way they would like or where they would like,

was psychologically challenging for the majority of participants. In the following illustrative example, the participant discusses how having to ignore her beliefs and values about dietary quality and sustainability in favour of cost savings causes them embarrassment and, arguably, a degree of distress as explained here:

> '*I think about sustainability and I think about how healthy something is, and depending on what's going on for me at that time and what is available, I find myself making choices where I ignore, sustainability, environmental impacts in favour of getting the cheapest possible thing...Which makes me feel so ashamed saying that because no, I never used to be like that, urgh*' (Participant 11, female, age range 35-44)

This next example points to the misery experienced by a participant whose diet had been so severely limited, in terms of variety and choice (due to cost), that they had also given up pursuing sustainable waste disposal practices due to physical and mental exhaustion illustrated here:

> '*it's effin miserable knowing that I've only got lentils and the eggs available. You know, that, it's repetitiveness is a crapper... I don't even recycle stuff sometimes, 'cause I cannot be arsed. I've gotta save my leg energy just for existing and that, phew, that's just a...I'm sure I'm not the only person who lives like this*' (Participant 08, female, age range 45-54).

This final example highlights the negative impact that rising food prices have had on this participant's mental health when trying to feed her family of four. This example also describes the loss of derived pleasure from shopping and cooking when cost was not as much of an issue for her:

> '*the price of the food is ridiculous. I've got four children, I'm a disabled single mother and I think that, very, it's very distressing and there's not, it used to be fun. I used to enjoy going shopping...you're looking for goodness, you're looking for vegetables and you cannae afford the price of vegetables 'cause it's gone sky high and I find that ridiculous, and that's what causes me anxiety, causes me depression as well, really makes me down*' (Participant 58, female, age range 35-44)

3.5 Mitigating the rising cost of food (actions and agency)

Throughout all interviews, participants' described actions they had been taking to manage their changed circumstances due to tighter budgets, and the individual agency they were using in the face of those challenges to mitigate the rising costs of food and other necessities. Thinking about the emotional, cognitive, and physical challenges of shopping in store, it is also important to understand the additional cognitive effort participants were dealing with in terms of the strategies and practices they were pursuing to transform food items into meals and snacks in their home environment. As such, the main sub themes that emerged included the *sacrificing on quality, quantity, and food preferences to make ends meet*, *maximizing food shelf life*, and *minimizing cooking energy costs.*

3.5.1 Sacrificing quality, quantity, and taste

To maximise food budgets, participants discussed making sacrifices and compromises in relation to the quality, quantity, and taste of the food they purchased which the following quotes illustrate. In this first example, the participant explains that they reluctantly shifted to purchasing supermarket own brands as a way of saving money. They pointed out they had no similar way of cutting costs, like this action represents, to manage down their energy bills or mortgage payments:

> '*we buy Lidl own brand…their own brand stuff is okay…would I want to really do that, not really but, you know, I can't cut corners on my gas bill and mortgage so I've got to cut corners somewhere else*' (Participant 35, female, age range 35-44)

In this next example, the participant described having significantly reduced the amount of fish they ate each week, compared to their habitual intake of 2-3 times a week, which is incidentally in line with Government recommended dietary guidelines:

> *'if I think back to when was the last time I actually made the grilled fish myself, like two months ago, compared to when I used to have it like two, three times a week for like years on end…I just don't buy them as often and I don't eat them as often*' (Participant 10, male, age range 25-34)

There were also instances of participants explaining that they had substituted cheaper food items despite not enjoying the taste of those items in order to eat more cheaply and healthily:

> *'I force myself into eating some kind of healthier, cheaper options. So, like tinned sardines and things like that... I didn't actually like them, but I forced myself to eat them because it's a really cheap nutritious thing'* (Participant 45, female, age range 35-44)

3.5.2 Maximising food shelf life

Participants talked about increasing the amount of tinned and frozen food they purchased and consumed due to their cheaper price and longer shelf life. As this participant explains:

> *'So, money wise, it always has to be getting the most for the, like getting my money's worth basically. Erm and a lot of that time it seems to be the unhealthy option, you know like, eh, like frozen stuff for example, that lasts a lot longer than if you bought fresh, erm, fruit and veg, which, you know, if I don't eat it within a week, it's gone bad then you end up throwing it away. Eh, it's sort of like frozen chicken strips, they're not healthy, you know, even if you do them in the air fryer, but they last long, I'm not worrying about having to use them in a certain date and stuff like that.'* (Participant 29, male, age range 25-34)

Here again, the participant explains that maximizing their food resources is a consideration when food shopping. Furthermore, they know that the frozen food items are not healthy (in this case, chicken strips), but that their overriding motivation is to maximise their food budget by buying food that will last longer and not be wasted by going off before it can be eaten. It is also interesting to note that participants' talk reflected the perception that frozen fruit and vegetables were of poorer quality compared to their fresh alternative.

3.5.3 Minimising cooking energy costs

In response to increased energy costs, participants spoke of limiting the use of conventional oven cooking methods favouring more affordable alternatives such as a slow cooker or an air fryer. This next illustrative quote indicates that for this participant it meant getting rid of their conventional cooker in favour of those items they perceived to be more manageable to run energy wise:

> *'when all of this [cost-of-living crisis] started I got rid of my big cooker. So now I've got like air fryer and erm, pressure cooker and you know, like, er, George Foreman Grill and that's so it's all little independent things...I can't, couldn't afford to run it...It's just not worth it.*' (Participant 02, female, age range 45-54)

This next participant talks about using the conventional oven very occasionally and when doing so, maximises the energy used by cooking several dishes at the same time:

> *'I probably cook most of my food in the slow cooker because it's cheaper. I very rarely cook in the oven. If I do, I'll do it on one of my batch cooking days and I'll have the oven full so as I maximise that time 'cause the cost is so high.*' (Participant 54, female, age range 45-54)

3.6 Stigma: In store experiences

Before we conducted the interviews and focus groups, we were cognisant of the fact that many participants would have experienced some form of stigma (previously and currently) as a consequence of their living with a higher weight and/or experiencing poverty/food insecurity. While we did not include any specific questions about participants' lived experiences of stigma when shopping in the supermarket or its potential influences on purchases or behaviours in the topic guide, both *weight* and *poverty-related stigma,* through insufficient income, featured prominently in participants' narratives. Those narratives also contained stories of actions individuals were taking, consciously and unconsciously, to *mitigate* those experiences.

3.6.1 Weight stigma in store; can't do right for doing wrong

For those who indicated they had experienced weight stigma, some described feeling watched and judged by other shoppers while they were in the supermarket, often regardless of what part of the store they were in, or what they were buying, as the following quote illustrates:

> '*if you go to the pizza aisle, I feel like someone's looking at you because you are, you know, choosing a pizza. And if you go to the salad aisle, I feel like people are looking at you as if to say, who are you trying to kid?*' (Participant 21, female, age range 35-44)

3.6.2 Poverty-related stigma: anticipated and experienced

Some participants also indicated that experiences of poverty-related stigma were another challenge they contended with in the supermarket environment, either as something they had internalized about their perceptions of themselves within the supermarket environment, or, as something that they had experienced because of interactions with others in that environment. In this first illustrative quote, the participant explains the conversations they were having with themselves about what others might make of their food choice, in this case beef mince. Here they explain their fear that some hypothetical individual might consider them purchasing expensive, leaner mince as misguided since they 'know' they do not have enough money to buy it, and by implication, should not be spending money on the more expensive version, when they could buy the cheaper, fattier version:

> *'I have not bought like, mince, beef mince, that is more than 5% fat... someone could say to me, well, you haven't actually got enough money, so why aren't you buying that one with a 20% fat, cooking it and then scraping the fat off it but Christ almighty my life's hard enough.'* (Participant 08, female, age range 45-54)

This participant ends by saying that this hypothetical individual would assume that if they did buy the cheaper mince, they would have to intervene (in the cooking process) and effectively remove some of the substance of the purchase (the fat) to make the mince healthier. However, this thought made the participant feel even more miserable about the existing challenges in their life. Something that we imagine can only add to the emotional toll of shopping on a restricted budget as discussed previously.

This next quote illustrates the poverty-related stigma experienced in the supermarket in relation to interactions with others, in this case the checkout operator. Here the participant explains what happened and how they were made to feel, when they found themselves five pence short of the amount they needed to pay at the checkout:

> *'I couldn't afford the shop...I was short by something like, oh, 5p, or something so stupid and, anyway I had to put some back...I started crying and she [checkout operator] got really, really nasty then and like loads of the shoppers were staring'* (Participant 33, female, age range 25-34)

Being directed to put food items back caused the participant significant embarrassment and emotional distress, raising questions about the nature and extent of trauma experienced by those facing extreme economic challenge and the possible enduring impact on the mental health of those suffering a similar fate at this time. It also raises questions about how widespread this type of practice is within the retail environment and the apparent lack of human compassion it communicates.

3.6.3 Minimising stigma through action, agency and social comparisons

Most participants described using personal agency and taking actions to reduce the risk of encountering perceived or experiences of weight or poverty-related stigma. In the following quote, the participant describes mitigating this risk by shopping online or using automated checkouts. By doing so this allows them to purchase their shopping (whatever it consists of), but also reduces the opportunity for others to see what they are buying, and by implication, judge them on those purchases:

> '*I never go to a person manned [checkout] to check out…I also do the, the one where you get your handheld scanner at the beginning of your shop and then you scan your shopping as you go and then you check out that way. So all of your shopping is already bagged…unless you get, you know, one of those people who come and check to make sure that you haven't stolen anything, erm, 90% of the time nobody ever gets to see what I've purchased. So yeah, I definitely always use the automatic checkouts'*

She went on to describe the impact of perceived weight stigma, the sense of feeling judged for her purchases, and how this manifests in the supermarket environment, where her discomfort results in the desire to conclude her shopping trip as soon as possible so she can escape and decompress.

> '*that* [feeling judged by others] *makes me not want to shop and it makes me want to get the shopping over and done with that much quicker and get out of there so that I can calm down again*' (Participant 21, female, age range 35-44)

A few participants talked about shopping in specific supermarkets they perceived to be less stigmatising. In this next example, the participant explained that their preferred supermarket was located in a deprived neighbourhood where

they found that staff were friendly, and experienced with handling requests for food boxes that would help with cost saving:

> *'they've got catchment area that includes a lot of poor people and staff in Lidl are nice and friendly. So, I like to go there because I've, I guess I feel comfortable, I don't mind asking if they've got the food boxes there, you know that kind of stuff.*' (Participant 08, female, age range 45-54)

This narrative communicates the participant's sense of ease about being in this environment, which contrasts quite markedly with the sense of dis-ease expressed above by those participants describing their experiences of stigma.

We also noted that participants sometimes made downward social comparisons (Festinger, 1954) when talking about their experiences of shopping on a very restricted budget, often comparing their situation as being less difficult and challenging than other people they knew. This next example illustrates this phenomenon:

> '*I see my friends who are on benefits, where they really, really are struggling and they are, you know, feeding their children processed food out of the freezer because that's all they can afford*'
> (Participant 35, female, age range 35-44)

This seemed to us to be another way that participants unconsciously mitigated the experiences of poverty-related stigma in this context.

4. Discussion

The aim of this study was to better understand the experience of people living with obesity and food insecurity when shopping in a supermarket environment for foods that meet their personal weight loss or maintenance goals. Prior to and during their shopping trip, participants described deliberate, conscious decision-making and effortful practices, in the face of numerous restrictions, and their associated negative emotional toll, to maximise their budget and attempt to purchase foods that aligned with their weight-related goals. Participants also described utilising resourcefulness, skills and strategies in what was often experienced as or perceived to be, a stigmatising environment.

While most participants discussed attempting or intending to manage their weight (e.g., by cutting back on unhealthy foods or replacing less healthy high fat, salt and sugar foods with healthier alternatives, mainly fruit and vegetables,

and cooking from scratch), they also spoke to the effort required and the challenges faced in maintaining these behaviours. Talking with participants, it became apparent that people living with obesity and food insecurity could be considered *Conscious Consumers*. Aligning with findings from previous studies, our results continue to demonstrate the resourcefulness, skills, and strategies utilised by people or households navigating food insecurity to acquire food and prepare meals on a tight budget (Beagen et al., 2018; Douglas et al., 2015; Power et al., 2023; Puddephatt et al., 2020). Such skills are underpinned by complex knowledge; shoppers on a low income need to know how to prepare specific meals with the products they can afford, whilst also aligning with their families' food preferences to ensure the food is consumed (Beagen et al., 2018). During discussions with our participants, it became apparent that people living on a low income hold knowledge on what constitutes a healthy diet, but struggle to operationalize this knowledge due to structural factors such as income and sociopolitical and economic environments; this has not been widely recognised in research and policy aimed at addressing food insecurity (Boyle & Power, 2021; Clark-Barol et al., 2021; Evans et al., 2015; Puddephatt et al., 2020). The notion of the conscious consumer also contradicts commonly held societal beliefs about people living on low incomes as just needing to ‘tighten their belt’ and budget more carefully (Cyrenians, 2022).

While most participants described undertaking practices related to the *Conscious Consumer* theme as a fairly recent response to a change in their financial circumstances (i.e., the cost-of-living crisis or unemployment), others had been affecting conscious, effortful decision making in the face of economic constraints for many years. While participants described practices used in preparation of and during their shopping trip, these practices were often shaped by restrictions. The *Restricted Consumer* theme reflects how budgetary constraints often hampered the ability to purchase and consume a healthy, sustainable diet. Their tight budget prevented participants from shopping in stores they believed to sell better quality produce, in a calmer and less overwhelming setting. Being restricted to shopping at specific, lower priced stores to maximise a limited budget rather than at their preferred store highlights one way in which food may be a vehicle for social exclusion (Clark-Barol., 2021). Many participants talked about sustainability in some capacity, most frequently in relation to recyclable packaging and locally grown or produced foods, however, their ability to purchase foods in line with these considerations depended heavily on price.

Participants often made comparisons around their past and present practices, contrasting their current inability to engage with sustainability when shopping in the supermarket to less constrained purchasing patterns enacted prior to their budget being so severely stretched. For some, this invoked a negative emotional response. Negative emotions also featured when participants described the experience of food insecurity. Mirroring existing qualitative research which uncovered the psychological distress experienced by parents having to make less healthy food choices for themselves and their families (Lindow et al., 2022; Leung et al., 2022), our participants described the emotional toll of restrictions; the distress, anxiety and shame experienced due to their situation and the accompanying sacrifices and compromises that this forced them to make. Despite the restrictions and the often-accompanied emotional burden, participants described taking actions and using agency to mitigate the rising costs of food and the constraints of their limited budget. Such actions included sacrificing the quality, quantity, and taste of the food they bought, which compliments the quantitative findings of Stone et al. (2024), where food-insecure individuals who stuck to a strict budget not only reported reductions in relation to food quality and quantity but also a reduction in the healthiness of the foods they purchased. Further, in exploratory analyses Stone et al. (2024) found those more adversely impacted by the cost-of-living crisis had poorer diet quality compared to those less impacted. Therefore, it is not inconceivable that the sacrifices discussed by participants could lead to the consumption of a less healthy diet, and ultimately increased weight, and worse health outcomes.

To limit food waste and to ensure they continued to consume vegetables and meats, participants described purchasing more tinned and frozen foods. Some viewed these products as being less healthy than the fresh version, however, this is not necessarily the case, frozen food may in fact contain higher levels of beneficial micronutrients than some fresh foods, due to food harvesting and processing times (Li et al., 2017; Miller & Knudson, 2014). Therefore, we recommend that, where applicable, messages around the healthfulness of frozen and tinned produce should be conveyed to consumers to encourage the purchase and consumption of these as comparable healthy alternatives to their fresh counterparts. Additionally, building on the findings of Stone et al. (2024) who found a positive association between food insecurity and the use of energy-saving appliances, participants' accounts affirm that the move from conventional cooking methods to the use of air fryers or other smaller appliances was made to

save on associated energy costs. Therefore, any intervention aimed at helping those living on a low income and obesity to purchase healthy food should be mindful of the options available to people living on a low income in relation to food preparation and cooking, as well as any general shift in cooking methods. While direct questions exploring the lived experience of stigma were not included in the topic guide, instances of perceived and/or experienced weight and poverty-related stigma occurring in store were raised. Goffman argued the experience of stigma could be contingent on whether the stigmatised characteristic is discredited; clearly visible or discreditable; concealable (Chaudoir et al., 2016). While body weight is discredited, feelings of shame or embarrassment may lead individuals to try and disguise the poverty they are experiencing (Douglas et al., 2015), rendering it discreditable. However, poverty may be extremely difficult to hide and may become discredited in certain contexts, including the supermarket. The Stigma and Food Inequity Framework proposes poverty related stigma can manifest at both a structural level, i.e., within the food environment or though food policies and an individual level, i.e., as perceived, anticipated or experienced stigma (Earnshaw & Karpyn, 2020). Ernshaw and colleagues argue these manifestations can lead to food inequity through mediating mechanisms such as access to resources or coping strategies which can determine and undermine the consumption of healthy food and compromise diet quality. Stone et al. (2023) also found that stigma associated with food insecurity was associated with poorer diet quality. Indeed, the adaption of shopping practices, discussed by one of our participants and found in previous research (Gombert et al., 2017), may reveal how a behaviour taken to minimise stigma (i.e., completing the shopping trip quickly; limiting the time spent within the retail environment to consider purchases, compare products or engage with nutritional labelling) could impact purchasing decisions and potentially, diet quality. Aside from weight and poverty, other factors such as race, ethnicity and gender may also play a role in the experience of stigma and result in multiple stigmatised characteristics being experienced simultaneously (Earnshaw & Karpyn, 2020). The intersectionality of stigma where multiple stigmatised characteristics converge (Earnshaw & Karpyn, 2020; Turan et al., 2019) may occur in specific contexts, such as the supermarket, and result in an overwhelmingly stigmatising experience. Stigma likely impacts customer mental health and their sense of well-being, and has moral and practical implications for retailers. Research exploring weight stigma in the retail environment suggests

such experiences have the potential to drive consumers elsewhere and could result in lost profits (King et al., 2006). Therefore, we recommend that supermarket interventions are designed to reduce experiences of stigma felt in store as this could benefit both consumers and retailers.

4.1. Strengths & Limitations

Food insecurity is considered a risk factor for health conditions, such as Type 2 diabetes (Essien et al.,2016; Gucciardi et al., 2019). In their screening questionnaire, almost all participants indicated that they lived with a chronic health condition, however, the impact of this condition on their dietary requirements or purchasing was not widely discussed and may be a limitation of this study. Given the economic environment during which this research was conducted and the semi-structured nature of the topic guide, discussions potentially centred on more salient influences of this time, for example, price, supermarket deals and promotions, or limiting food waste. The role of health conditions on the purchasing decisions and behaviours for people living with obesity and food insecurity is an area which would benefit from future research. While we recruited participants from a range of geographical locations throughout England and Scotland, the limited sample size means our findings cannot be generalized more widely. However, the aim of this qualitative research was not representativeness but rather an exploration of a range of different experiences of people living with obesity and food insecurity when shopping for food in the supermarket.

Conducting this research allowed us to build on and contextualize the findings arising from the linked quantitative work discussed previously (Stone et al., 2023), helping us to better understand the often effortful practices and difficult choices behind participants purchasing behaviours and ultimately, diet quality.

5. Conclusion

In the face of a continued economic instability in the UK, identifying how people living with obesity can be supported to eat a healthy, nutritious, and sustainable diet that helps manage their weight is of high importance. This research helps illuminate the ways in which people living with obesity and food insecurity navigate the supermarket context as they strive to purchase foods they believe will help them achieve and maintain a healthy weight. The findings highlight the cognitive demands and extensive effort expended both prior to and during

shopping trips, conducted within a restricted environment where individuals are potentially weighted down by the associated emotional toll of restrictions whilst perceiving and/or experiencing stigma. It is evident how behaviour change interventions aimed at improving dietary quality and reducing obesity levels are unlikely to be successful if they assume all citizens are equally positioned to purchase good quality, healthy food and consume a diet that aligns with nutritional recommendations. The findings strengthen the argument that upstream changes within the wider food system are needed to help enable all people living with obesity have equitable access to healthy, environmentally sustainable foods, for example, extending the provision of free school meals and ensuring voucher schemes (i.e,. Healthy Start in England and Best Start in Scotland) and benefit payments align with inflation. Such support may also alleviate the heavy emotional burden of restrictions related to the purchase of a healthy, sustainable diet, and could help minimise poverty-related stigma experienced by those on low incomes who are often unable to engage with such purchasing recommendations.

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Figure legend (for figure on page 6)

Fig. 1: Flow chart of participant recruitment

FI: food insecurity, LWO: living with obesity; n: number