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**Supermarket Nutritionists' Perspectives, Views, and Experiences on Affordability  
Interventions to Support Healthier and More Environmentally Sustainable Food  
Purchasing in UK Retail Settings**

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## **Abstract**

**Background:** Food insecurity (lack of reliable access to affordable and nutritious food) is a major concern in high-income countries because it increases the risk of poor nutrition, obesity and associated adverse health outcomes. Healthier diets are often also more environmentally sustainable (hereafter; sustainable), an important factor in reducing climate change. Practice-based interventions are therefore urgently needed to support people living with food insecurity and obesity to access and afford healthier and sustainable foods. Supermarkets are a key area for intervention, as purchasing can be an antecedent to consumption. However, the retailers' perspectives on the feasibility of implementing affordability interventions is often overlooked and under-researched. Therefore, this study explored the perspectives, views, and experiences of major UK supermarket senior nutritionists on the acceptability and feasibility of using affordability interventions for healthier and more sustainable food in the supermarket.

**Methods:** We recruited seven UK senior supermarket nutritionists who represented 85% of the UK grocery market share. We used semi-structured interviews and analysed the data using a reflective thematic analysis approach.

**Results:** Supermarket nutritionists perceived that their business did prioritise health and environmental sustainability for customers. However, there were several challenges encountered when trying to promote healthier and more sustainable food in the supermarket environment, including profitability concerns, unpredictability of intervention outcomes, control over own-brand products, perceived intention-behaviour gap, and a belief that they are already implementing affordability interventions. Differences in how supermarkets approach the evaluation of interventions also emerged, as well as a willingness to collaborate with academics and other retailers to optimise the evaluation of interventions. Lastly, supermarket nutritionists raised the need for an operationalised definition for sustainable food products.

Conclusions: Affordability interventions to support customers to purchase healthier and more sustainable food require supermarkets to consider multiple challenges. Findings highlight the need for upstream intervention that mandates and facilitates multi-lever approaches to health and sustainability without compromising commercial viability, along with practice-based approaches to implementation and evaluation.

Key words: Supermarkets, Affordability, Customer, Commercial, Qualitative, Living with Obesity, Healthy Diets, Food Insecurity

## 1 **Background**

2 Across the globe, current dietary patterns are suboptimal for human and planetary health. In  
3 2022, approximately 35% of the world population were unable to afford a healthy diet (1),  
4 contributing to poor quality dietary patterns that contribute heavily to the global burden of  
5 disease (2). Indeed, poor diet quality is directly linked to an increased burden of disease,  
6 including an increased risk of non-communicable diseases, such as stroke, cancer, heart  
7 disease, and is ultimately associated with overweight and obesity (3). Moreover, globally, a  
8 third of total anthropogenic greenhouse gas emissions (GHGE) are produced by the food  
9 system (4). Therefore, there is broad consensus that global dietary patterns need to be  
10 shifted in favour of health and environmental sustainability (1).

11 In the United Kingdom (UK), the government uses ‘the Eatwell Guide’ (consisting of nine  
12 recommendations) as a public health tool to define dietary recommendations on which foods  
13 and drinks constitute a healthy, balanced diet (5). As well as being optimal for human health,  
14 consuming a diet in line with the Eatwell Guide has been found to be environmentally  
15 sustainable (hereafter defined as sustainable - i.e., lower in GHGE, land use, and water use  
16 (6)). However, according to an assessment of multiple observational cohort studies,  
17 adherence to all nine Eatwell Guide recommendations in the UK has been estimated at less  
18 than 0.1% (7), suggesting that the UK population’s diet is not meeting the requirements to  
19 promote population or planetary health. In England, obesity levels are a major public health  
20 issue, with approximately 68% of men and 60% of women classified as living with  
21 overweight, among whom 27% of men and 29% of women are classified as living with  
22 obesity (8). The drivers of obesity are complex, but often the food environment (i.e., the  
23 physical, economic, political, and sociocultural context that can influence an individual's food  
24 choice) is implicated (9). Inequities within the food environment have also been highlighted,  
25 particularly for those living with low incomes as they can lack access to good-quality food  
26 (10,11). In high income countries, people living in areas of high deprivation have a greater  
27 likelihood of living with obesity (12). One potential reason for this disparity is the experience

1 of food insecurity (FI). FI is known as 'the state of being without reliable access to enough  
2 affordable and nutritious food' (13), and those who are food insecure are also more likely to  
3 be living with obesity (14,15). Moreover, in our previous work we found that recent economic  
4 crises, such as the cost-of-living crisis (i.e., cost of everyday essentials rising more quickly  
5 than wages), have exacerbated the experience of being food insecure in people living with  
6 obesity (PLWO) and also been associated with greater use of specific food purchasing  
7 behaviours (i.e., use of budgeting, use of supermarket offers) and food preparation practices  
8 (i.e., use of energy-saving appliances, use of resourceful cooking styles (e.g., reducing food  
9 waste)) (16). Therefore, obesity and FI often co-occur, and the drivers of this relationship are  
10 likely exacerbated by recent global economic hardships (15), yet how best to support this  
11 group to purchase healthier and more sustainable food, within the complex food system, is  
12 poorly understood.

13 The food environment is one major component of the food system where dietary habits can  
14 be influenced, specifically within the retail food environment (17). In the UK, it has been  
15 estimated that 76-83% of food for consumption at home is purchased in a supermarket (18),  
16 depending on household income (19). Therefore, supermarket retailers are in a strong  
17 position (albeit not entirely responsible) to help encourage and enable customers to make  
18 healthier and more sustainable food purchases. Supermarkets can encourage customers by  
19 using interventions using behavioural levers from the traditional marketing mix. The four key  
20 levers are: placement (e.g., location of product in-store), product (e.g., range of products),  
21 promotion (e.g., offers and advertising) and price (e.g., baseline price of a product) (20–22).  
22 In a previous systematic review, which evaluated the effectiveness of supermarket  
23 interventions in their ability to change food purchasing at a population level, interventions  
24 were categorised as 'economic' (i.e., price increase, decrease, or financial reward), 'store  
25 environment' (i.e., changes to microenvironment), or 'labelling/ education' (i.e., product  
26 labelling or customer education) (23). Results from this review indicated that economic

1 interventions were the most effective for influencing purchasing behaviour towards healthier  
2 purchases.

3 UK supermarkets have publicly committed to supporting customers during the cost-of-living  
4 crisis (24) and often implement and evaluate interventions to promote healthy and  
5 sustainable food purchasing. For example, national supermarket chain Sainsbury's plc  
6 implemented a targeted supermarket intervention that was aimed at supporting customers  
7 with Healthy Start vouchers, by offering an additional £2 top-up voucher to this scheme. The  
8 Healthy Start scheme (25) is a government initiative targeted at low-income pregnant  
9 mothers (10 weeks into their pregnancy) and parents/caregivers who are responsible for at  
10 least one child under 4-years of age. The scheme provides vouchers towards the purchase  
11 of fruit, vegetables, pulses, milk, or infant formula. Findings from the £2 top-up scheme  
12 indicated that customers purchased on average 13 times more portions of fruit and  
13 vegetables per transaction, and their purchasing reflected greater adherence to the Eatwell  
14 Guide (26). They also purchased fewer meat and discretionary products (27). These results  
15 indicate that supermarkets are a key sector that could be optimised to better enable  
16 vulnerable groups to purchase healthier and more sustainable food products.

17 In a previous study (28), our research team gathered insights from PLWO about what  
18 supermarket interventions they would find most helpful to support them in purchasing  
19 healthier and more sustainable food in the supermarket. Our sample (N = 583) indicated that  
20 interventions relating to price and incentivisation (i.e., economic interventions, as per  
21 categorisation in Hartmann-Boyce et al. (2018)<sup>23</sup>) would be the most helpful, and  
22 interventions relating to labelling/education would be the least helpful. These findings were  
23 complemented further by our parallel qualitative work through in-depth interviews with PLWO  
24 and FI, who highlighted the severity of living with financial constraints with regards to  
25 shopping for healthy and sustainable food in the supermarket (29). Therefore, employing  
26 supermarket interventions that are related to price and affordability may be pivotal in  
27 addressing dietary inequalities in PLWO and FI.



1           Whilst research indicates that in-store affordability interventions can benefit healthier  
2 food purchasing (30), the feasibility of implementing these interventions from a commercial  
3 perspective remains unclear (31). Existing studies highlight the significant barriers faced by  
4 retailers, including profitability concerns and limited consumer demand, which are associated  
5 with promoting healthier food (32). However, such studies are either in the context of small  
6 stores or independent supermarkets that do not reflect a large grocery market share and  
7 scalability of intervention was not tested. Therefore, the current study sought to address this  
8 evidence gap by using a qualitative methodology to explore the perspectives, views, and  
9 experiences of major UK supermarket senior nutritionists on the acceptability and feasibility  
10 of using price and incentivisation (hereafter defined as 'affordability interventions') as  
11 interventions for healthier and more sustainable purchasing in the supermarket setting.

## 12 **Methods**

### 13 **Design**

14           We conducted a qualitative study using semi-structured online interviews with a  
15 purposive sample of seven senior supermarket nutritionists from major UK supermarket  
16 retailers. Supermarket nutritionists were identified through a gatekeeper organisation, IGD  
17 (Institute of Grocery Distribution), who provided access to a working group of retailers and  
18 manufacturers. Within this group, there were 10 supermarket nutritionists who collectively  
19 represented 98% of the UK grocery market share (33). During a working group meeting, the  
20 study was advertised and expressions of interest from supermarket nutritionists to participate  
21 in the study were shared with the academic lead. Seven of the 10 supermarket nutritionists  
22 agreed to participate, representing retailers with 85% of the UK grocery market share (33).  
23 Participants represented discounters through to higher end supermarket retailers. Due to the  
24 sensitive nature of UK competition law, according to the Competition Act (1998), the strictest  
25 confidence was employed during the interviews to ensure retailers remained anonymous.  
26 Participating retailers were provided with a participant information sheet, the interview  
27 schedule, and a consent form prior to the interview. Written consent was obtained in

1 advance of the interview. Ethical approval was granted from the University of Liverpool  
2 Research Ethics Committee, Ethics number 12622.

3 The interview schedule was co-produced in partnership with the wider project team  
4 (members of FIO Food (34)), with our industry retail partner (a major UK supermarket), and  
5 social impact organisation (working alongside the food and grocery industry undertaking  
6 research for the benefit of the public). A copy of the interview schedule is in Supplementary  
7 Materials 1.

8 The interviews were conducted online by RAS between August 2023 - October 2023, one to  
9 one, using Microsoft Teams and lasted approximately 30 minutes (range: 19 minutes – 41  
10 minutes). During each interview, the participant gave additional verbal assent. Each  
11 interview was video recorded using Microsoft Teams' recording feature. Interviews were  
12 transcribed verbatim using Microsoft Teams' auto transcription feature into Microsoft Word  
13 within 24 hours of the interview. RAS manually checked all auto transcriptions for accuracy.  
14 The video recording of the interview was deleted immediately after transcription. RAS  
15 anonymised all transcripts and assigned pseudonyms for each supermarket (e.g.,  
16 Supermarket A). The anonymised transcripts were then sent to the corresponding  
17 supermarket for their approval regarding the level of anonymisation and for sense-checking.  
18 As a further privacy step, after analysis, two of the project team were provided with a full list  
19 of anonymised retailer quotes to assess whether supermarkets were identifiable. All quotes  
20 were deemed non-identifiable.

## 21 **Data Analysis**

22 The transcripts were thematically analysed by two of the authors (RAS and CAH) following  
23 steps outlined by Braun and Clarke (2021)<sup>35</sup>. The analysis was conducted using an inductive  
24 'bottom-up' approach in which there was no attempt to fit the data into an existing theory  
25 (35). The steps involved, i) *familiarisation*; reading each transcript completely to familiarise  
26 with the data (RAS), ii) *coding*; generating initial descriptive codes for relevant information in

1 each data item (RAS), iii) *initial themes*; exploring relationships between codes to form a  
 2 structure (RAS, CAH), iv) *developing and reviewing themes*; relationships between codes  
 3 that formed themes were reviewed and discussed until consensus was reached (RAS, CAH,  
 4 and wider FIO Food project team during routine research meetings), v) *naming and defining*  
 5 *themes*; theme names and their definition were derived from the meaning of the clustered  
 6 codes (RAS and CAH). NVivo 14 software was used to manage and support data analyses.

7

8 **Results**

9 **Thematic Analysis**

10 Four themes were generated inductively from the reflective thematic analysis with twelve  
 11 associated subthemes (Table 1). Each theme is defined and then the subthemes are  
 12 described with various retailer quotes to illustrate findings.

13 **Table 1:** Summary of Themes and Subthemes following Thematic Analysis of Retailer  
 14 Interviews (N = 7)

Theme	Subtheme
1. Business pledge: Supermarkets' Commitment to Health and Sustainability	1.1. Health and Sustainability Embedded in Supermarket Identity
	1.2. Supermarkets' Ethical Obligations to Health and Sustainability
	1.3. Strategic Alignment with Health and Sustainability
2. Navigating complexities in healthy food promotion in the supermarket	2.1. The "We do this Already" Gap
	2.2. Balancing Act: Profitability vs. Healthy Food Promotion

- 2.3. Expecting the Unexpected: Mismatched Intervention Effects and Competing Messages in Supermarkets
- 2.4. “We have the Biggest Influence Over Them”: Control Over Own Brand Products
- 2.5. Perceived Customer Ambivalence: The Challenge of Healthy Food Demand
- 3. Evaluation Challenges and Pursuing Collaborative Solutions
  - 3.1. Illuminating Supermarket Blind Spots: Limitations in Evaluation and Reporting
  - 3.2. Collaborating Towards a Healthier, and more Sustainable Future
- 4. Navigating the Undefined: Challenges in Promoting Sustainable Food Choices
  - 4.1. The Complexities of Defining and Promoting Sustainable Food Choices
  - 4.2. Estimating Sustainability through Accredited Sourcing and Proxy Measures

1

2 **Theme 1: “Business pledge: Supermarkets’ Commitment to Health and Sustainability”**

3       When asked about their supermarkets’ approach to health and sustainability,  
 4 respondents universally claimed that their businesses had an “*aligned vision*”, which mostly  
 5 spanned the entire business and was navigated by top level management (albeit for some  
 6 this was a recent interest from top level management and a recent convergence of health  
 7 and sustainability strategies). Moreover, the majority of respondents referred to their  
 8 supermarkets’ approach to health and sustainability as “*embedded within their*  
 9 *supermarket’s identity*”, where supermarkets believed they had corporate “*responsibility*” for  
 10 ensuring both the customer’s health and planetary health, due to the powerful role that they  
 11 play in shaping customer purchasing behaviour.

12 Subtheme 1.1: “Health and Sustainability Embedded in Supermarket Identity”

1 Central to this subtheme is the shared belief across respondents that the healthiness  
2 and/or sustainability of food for customers are integral components of their DNA, reflecting a  
3 deeply ingrained and inflexible commitment to these values. As exemplified in the following  
4 quote, respondents felt that their organisational ethos and guiding principles were governed  
5 by these components:

6 *“So, we've got a rich legacy really. So, we were one of the first retailers to have a*  
7 *healthy living brand - so health has always been a part of our DNA.”* (Supermarket E)

#### 8 Subtheme 1.2: “Supermarkets' Ethical Obligations to Health and Sustainability”

9 This subtheme refers to respondents' acknowledgment of their ethical responsibility toward  
10 both customer health and planetary well-being, which aligns with the concept of corporate  
11 social responsibility. Indeed, in the following quote this respondent recognised their position  
12 as a powerful actor in the food system:

13 *“I guess the case with sustainability is that we, as a food industry and as a big retailer,*  
14 *have our part to play in helping to ensure that we have a sustainable future for*  
15 *everyone.”* (Supermarket A)

16 Moreover, the collective importance placed on corporate social responsibility in guiding  
17 supermarkets' decisions and actions may reflect supermarkets' proactive stance in  
18 contributing positively to society and the environment. For example, Supermarket E said:

19 *“We know that our business depends on the world around us. As a UK retailer, we*  
20 *know we can make a big difference. Our commitment to operating in a responsible and*  
21 *sustainable way reflect our values.”* (Supermarket E)

22 Respondents reported that supermarkets conceived their role in promoting healthy,  
23 sustainable diets as integral to supporting customer health and planetary health. This  
24 emphasizes how supermarkets' ethical obligations are equally as imperative as other  
25 business outcomes, such as profit motives:

1           *“So yeah, the strategy is grounded within accepting and acknowledging that as a food*  
2           *retailer we play a really important part in making sure that healthy eating is exciting*  
3           *and easy.”* (Supermarket B)

4       However, whilst appearing philanthropic, supermarkets corporate social responsibility  
5       behaviours appeared to be related to the wider pressures of being seen to be doing *“the*  
6       *right thing”*, such as from social pressure. This sentiment is illustrated by the following two  
7       respondents:

8           *“And there is an element of ‘you have to do the right thing.’*” (Supermarket C)  
9

10          *“We’ve also made [name of low-cost pricing strategy for healthy food], partly because*  
11          *it’s the right thing to do.”* (Supermarket G)

12

### 13       Subtheme 1.3: “Strategic Alignment with Health and Sustainability”

14       All respondents flagged the strategic commitment of their supermarket to prioritise both  
15       health and sustainability initiatives at the highest levels of leadership. For example:

16          *“So, the responsibility to achieve commitments/strategy on health and sustainability*  
17          *lies at manager level, director level. Higher level management is highly invested in*  
18          *achieving these commitments too. Supermarket F is a close family, and we take our*  
19          *commitments very seriously and we all are accountable.”* (Supermarket F)

20       However, for some respondents, the involvement of the highest levels of leadership in  
21       sustainability specifically had only occurred recently, suggesting that there has been a pivot  
22       in the priorities of supermarkets:

23          *“So, the top is really engaged in the Environmental, Social, and Governance (ESG)*  
24          *now, but that’s literally been agreed in the past [period of time].”* (Supermarket C)

25       Indeed, the prioritisation of sustainability may have resulted from external pressures, such as  
26       growing customer concern for climate change, or pressure from Non-Governmental

1 Organisations (NGO's) to make pledges in line with their initiative (e.g., World Wildlife Fund  
2 (WWF) Livewell Basket (WWF, 2021) campaign, where supermarkets pledged support to the  
3 ambition of halving the environmental impact of UK shopping baskets by 2020), as illustrated  
4 by the following respondents quote:

5 *Interviewee: "I think we've been doing various initiatives, but I would say of the last  
6 three years, the [name of policy] programme came into force, and it was a change  
7 being led by the board..."*

8 *Interviewer: "and what do you think brought about that change?"*

9 *Interviewee: "... I think you would be wrong to shy away from you know NGO pressure  
10 and what's happening in market." (Supermarket G)*

11 Nevertheless, most respondents noted that their strategy for health and sustainability  
12 operated as a combined, dual approach, rather than individually, which suggests that  
13 supermarkets are beginning to appreciate the intersectionality of health and sustainability  
14 and the idea that it exists as part of a system. This streamlined approach to health and  
15 sustainability was seen by respondents as being supported by a range of departments and  
16 made use of branded (i.e., named) roadmaps/strategies to drive meaningful change across  
17 their operations:

18 *"So basically, the overall strategy is called [name of policy] and basically healthy and  
19 sustainable diets are a pillar of one of those work streams." (Supermarket G)*

20 *"So, we have a sustainability strategy that would cover health in it. So, in [year] we  
21 launched [name of commitment/policy for supermarket D] which is Supermarket D's  
22 how we intend on being sustainable until [year]. Supermarket D's commitments for a  
23 healthier future sit within this plan." (Supermarket D)*

24 As illustrated in the following quotes, it was discussed by some respondents that their  
25 supermarket uses a dual strategy for health and sustainability, rather than individual.

1 Respondents suggested that this was because of an increasing customer awareness of the  
2 interconnectivity between health and sustainability which had not been observed in the  
3 market before. This emphasises the key role that customers play in shaping supermarkets'  
4 approach to business:

5 *“Well, years ago we've done them [health and sustainability interventions] separately,*  
6 *so we had health events where when you go down the ‘power aisle’ and it was all*  
7 *about health messaging. But, I think customers are starting to see the two pieces*  
8 *(health and sustainability) coming together a little bit more as time goes on, and by*  
9 *living in the environment that they're in.” (Supermarket E)*

10 *“Especially over the last five years or so as it's imperative to be choosing healthy*  
11 *diets, you've got that broader “good for me” and “good for the planet” motivation that*  
12 *customers have. I think our strategy sits very well alongside that.” (Supermarket B)*

13

## 14 **Theme 2: Navigating complexities in healthy food promotion in the supermarket**

15 When discussing their historic experiences of using affordability interventions to promote  
16 healthy food in the supermarket, most respondents recounted various challenges that they  
17 had encountered. Due to these challenges, supermarkets indicated that future healthy food  
18 promotion interventions would require greater assurances that interventions would operate  
19 optimally (i.e., as hypothesised). For some respondents, they questioned the proposal that  
20 supermarkets should use more affordability interventions to support PLWO and FI given that  
21 they believed *“they were already”* implementing sufficient affordability interventions. For  
22 other respondents, they highlighted the difficulty of promoting healthy food over food high in  
23 fat, sugar, and salt (HFSS), as promoting the former was considered *“margin dilutive”*  
24 (decrease in profits). Most respondents also flagged the unpredictability of customer  
25 behaviour regarding healthier food promotion, where investing in affordability interventions  
26 can result in contrary effects to the hypothesised outcome (e.g., no increase in sales for the



1 promoted product). It was suggested that this could be a result of the effect of “*competing*  
2 *messaging in store*” and the “*influence supermarkets have over branded and own brand*  
3 *products*”. Alternatively, it could reflect the ‘say-do’ gap, where despite “*fulfilling customer*  
4 *demands for healthy food promotion, this does not always result in an increase in sales*”.

#### 5 Subtheme 2.1: The “we do this already” gap

6 When discussing the proposal to implement more supermarket interventions relating to  
7 affordability, one respondent expressed confusion as they believed they already  
8 implemented such interventions. They questioned how PLWO and FI were interpreting these  
9 interventions, which highlights a potential gap between customer experiences and existing  
10 practices:

11 *“To be honest when I was reading this question, I was thinking “we’re already doing*  
12 *this and most retailers are, so it made me question what are the participants classing*  
13 *as healthy? Why do they think that we’re not doing this? Is it something we need to do*  
14 *more of?”* (Supermarket D)

15 Similarly, a respondent from another supermarket showed an awareness of what  
16 interventions their competitor supermarkets had historically implemented. They also  
17 indicated that affordability interventions are, currently being implemented or have been  
18 implemented previously

19 *“I think either people have done them before or they’re doing them [price/*  
20 *incentivization and store environment interventions].”* (Supermarket E)

#### 21 Subtheme 2.2: “Balancing Act: Profitability vs. Healthy Food Promotion”

22 Respondents frequently mentioned the commercial viability of healthy food whereby there  
23 were clear differences in profitability between that of healthy food (often own branded) and of  
24 unhealthy food (often branded). One respondent referred to differences in profitability  
25 between unhealthy food (i.e., crisps and chocolate in this case) compared to that of healthier

1 food due to customer popularity. They indicated that sales of healthier food were naturally  
2 lower than less healthy food and so promoting healthier food products was not commercially  
3 sensible as the intervention would not likely increase sales:

4 *“You know there’s a commercial element around what’s commercially viable because*  
5 *healthier food is less profitable, and I know that’s a really broad statement, but if you*  
6 *think about the categories where you’ve got unhealthy food like crisps and chocolate,*  
7 *the healthier versions of those products are not as popular with customers and*  
8 *they’re not as profitable.”* (Supermarket C).

9 Similarly, another respondent underscored their awareness and desire to support customers  
10 but stressed how this desire must be balanced with remaining a commercially viable  
11 business.

12 *“In terms of price, if I’m being completely honest, in terms of inflationary pressures,*  
13 *it’s a commercial business, it’s really, really tricky to do something different...I think*  
14 *price is probably the most important thing to our customers, particularly in the cost-of-*  
15 *living crisis, but it’s probably the hardest one to do from a business perspective.”*  
16 (Supermarket G)

17 Two respondents took this challenge further and indicated that whilst it would be ideal to  
18 promote healthier food, advertising budgets are limited and so without seeing an uplift in  
19 sales of the promoted food, the pricing investment must end. This is likely to partly be the  
20 result of healthier food (i.e., fruit and vegetables) being an own-brand product, meaning that  
21 affordability interventions are funded purely by the supermarket, not with the support of  
22 suppliers’ funding:

23 *“I suppose if we did invest money in a [healthy] product, I don’t know how long we*  
24 *would need to keep it on for before you would need that investment to go on to*  
25 *another product. I suppose businesses only have so much money, so they can’t keep*  
26 *pumping money into price investment.”* (Supermarket D)

1 As a result, respondents highlighted the difficult decision that must be made between  
2 funding an intervention in favour of health (which is often own branded, like fruit and  
3 vegetables), against promoting branded, products (often HFSS) where sales are more likely  
4 to be made:

5 *“And then when it's an own brand product, like produce (i.e., fruit and vegetables).  
6 They're already, you know, maybe margin dilutive (i.e., decreases profit margins) or  
7 might not have profit. So, where does the money come from to drive those  
8 promotions to promote them on an end where you could be making money from a  
9 branded product?”* (Supermarket C)

10 Indeed, another respondent poignantly highlighted that any interventions related to the price  
11 of healthier products must be profitable as supermarkets are not *“charitable”*:

12 *“A key element of our strategy that we're putting forward, our ambition, is to make it  
13 profitable and sustainable to make healthy choices accessible, because otherwise  
14 we can't do it because we are a business, it can't be a charitable intervention  
15 because you can only support that for a period of time.”* (Supermarket C)

16 Subtheme 2.3: “Expecting the Unexpected: Mismatched Intervention Effects and Competing  
17 Messages in Supermarkets”

18 Whilst there was uncertainty regarding the profitability of promoting healthier food, a further  
19 barrier that was mentioned related to the unpredictability of intervention outcomes due to the  
20 store environment. There was broad agreement between respondents that the store  
21 environment was a complex arena with many activations happening simultaneously. As a  
22 result, interventions that are theoretically sound can occasionally result in unexpected  
23 outcomes or even failure, as it is not possible to solely implement one intervention in  
24 isolation in a real-world supermarket. For example:

1           *"I think if anything, what we are seeing is that these hypotheses are one thing, but*  
2           *what happens in real life is quite another, especially when there's so many other*  
3           *things going on in the store."* (Supermarket A)

4   One respondent recalled their experience of an intervention that was aimed at supporting  
5   customers to transform their baskets in favour of health. However, despite being well-  
6   intentioned, when implemented, there were other in-store marketing activations running  
7   simultaneously, specifically on seasonal products (i.e., *"alcohol and BBQ stuff"*). As a result,  
8   the respondent believed this hindered the successfulness of their health intervention, and  
9   even appeared to express a sense of defeatism by reducing their well-theorised intervention  
10   to *"just noise"*. Therefore, the competing messaging in-store may reflect an incongruence in  
11   business interests between supporting customer health and promoting sales of foods  
12   preferred in a season (which are often less healthy).

13           *"I think it's very difficult in a busy retail environment, you just can't influence what else*  
14           *is going on in the shop. We've run initiatives before where our customer said they*  
15           *wanted more help finding healthy diets, so, as a group of nutritionists, we all went*  
16           *into the shop and did healthy basket makeovers for customers. We were taking*  
17           *customers on healthy store tours showing them stuff too. But, during that, other stuff*  
18           *was going on in the shop at the same time, which undermined the message slightly.*  
19           *Like, a massive front of store packed full of alcohol and BBQ stuff..."* (Supermarket  
20    B)

21   Nevertheless, respondents' awareness of this unpredictability appeared to have instilled a  
22   level of predictability, where they expect *"there are some circumstances that they can't*  
23   *control"*:

24           *"Interventions might run coincidentally at the same time as a big event or something*  
25           *that's happened in the news, so, we've learned that there are some circumstances*  
26           *that we can't control."* (Supermarket E)

1 Subtheme 2.4: “We have the biggest influence over them”: Control over own-brand products

2 Several respondents referred to the challenge of only being able to influence their own-brand  
3 products and as a result, existing health strategies were often limited to only these products.  
4 Another respondent highlighted that their supermarket’s health targets and commitments  
5 would only be related to own-brand products because this was the area where they were  
6 able to “influence” the most.

7 *“It [health targets/commitments] most likely would be on own brand stuff just because*  
8 *we have the biggest influence over them. So yeah, all of our own brand products*  
9 *would have to meet salt, calorie targets and use recyclable packaging, have fair trade*  
10 *ingredients.”* (Supermarket D)

11 The respondent went on to highlight how, as nutritionists, their power and influence over the  
12 supermarket environment was limited. Like the previous subtheme regarding the commercial  
13 viability of healthy food promotion and competing messaging in-store, the following  
14 respondent described how, in addition to other initiatives being promoted in-store (e.g., BBQ  
15 food in summer), suppliers and manufacturers of branded food can also obscure health  
16 intervention messages.

17 *“There’s always lots of different messages, lots of different initiatives, even stuff I’ve*  
18 *got no control over, like things that suppliers come in and do, and that can make it*  
19 *quite tricky as well.”* (Supermarket B)

20 Subtheme 2.5: Perceived Customer Ambivalence: The Challenge of Healthy Food Demand

21 The price of healthier food was frequently mentioned by respondents as being their  
22 customers’ largest barrier to healthy eating. Thus, the suggestion to implement affordability  
23 interventions was unsurprising to our respondents, such as:

24 *“I’m not surprised customers have said price because obviously price is one of the*  
25 *key barriers to healthy eating.”* (Supermarket C)

1 However, respondents highlighted how when price is removed as a barrier to healthy eating  
2 (i.e., through affordability interventions), customers do not always increase their purchasing  
3 of healthy foods. Instead, one respondent suggested that the convenience of less healthy  
4 food was more alluring than the removal of price as a barrier to healthy food:

5 *“Whilst customers say that they want healthier choices, they don't necessarily shop*  
6 *in that way... And the issue is that even when you promote those healthier choices, it*  
7 *doesn't necessarily mean that customers buy more of it, because, often the*  
8 *healthiest choice is the least convenient, and you've got to do something to it to prep*  
9 *it, to make it easy to eat, and that takes effort.”* (Supermarket A)

10 Alternatively, another respondent attributed this ambivalence to customer preference, where  
11 the price and promotion of less healthy snacks (in this case, crisps) and its healthier  
12 counterpart (in this case, baked crisps) were held constant, sales of the less healthy snack  
13 were highest:

14 *“What we see in the data is even when they're the same price, people don't purchase*  
15 *them or don't purchase them as much...If you take baked crisps and normal crisps, I*  
16 *know they're not the healthiest thing, but it's a healthier alternative within the*  
17 *category. They're the same price and they're on the same promotion, but we always*  
18 *will sell more of the standard variant. So, it's not that price is the barrier in that*  
19 *instance, it's that customers prefer the less healthy product.”* (Supermarket C)

### 20 **Theme 3: Evaluation Challenges and Pursuing Collaborative Solutions**

21 Throughout all interviews, respondents reflected on their own and their competitors' use of  
22 affordability interventions (e.g., loyalty cards) to support customers with purchasing a  
23 healthier and/or more sustainable diet. Respondents described their approach to (or their  
24 lack of) evaluating the effectiveness of interventions, and this highlighted the *“varied and*  
25 *diverse approaches”* taken to intervention evaluation between retailers. Despite these  
26 differences, most respondents showed a prevailing *“willingness to collaborate”* with other

1 retailers and academics to maximise the effectiveness of affordability interventions for  
2 health.

3 Subtheme 3.1: Illuminating Supermarket Blind Spots: Limitations in Evaluation and  
4 Reporting

5 Several respondents discussed the lack of standardisation between retailers in how  
6 supermarket interventions were evaluated and reported. Intervention evaluation appeared to  
7 exist on a continuum between respondents, where some were more advanced (such as  
8 respondents from retailers who assessed basket sales and commercial return: profitability,  
9 product margins, price elasticity) and others who were in their infancy. For those  
10 respondents from retailers in their infancy, this did not indicate that supermarkets were not  
11 implementing many different interventions, rather it reflected a potential shortfall in their  
12 approach to assessing the impact of those interventions:

13 *“We’ve done loads of stuff on health and sustainability over the years, but we’ve been*  
14 *really bad at evaluating it, so you know, we look to other retailers and we think people*  
15 *are doing a much better job of saying like “we did X and it had this impact.”*

16 (Supermarket C)

17 One respondent spoke on behalf of all retailers (*“I think we are all in agreement”*) to  
18 underscore the volume of supermarket interventions for health in retail to date. They warned  
19 of the potential confusion experienced by retailers from the number of often repeated  
20 interventions for which outcomes and effectiveness may vary. They noted that a  
21 consequence of the lack of standardisation to intervention evaluation was the inability to take  
22 learnings from other retailer’s intervention efforts:

23 *“I think generally as retailers, I think we are all in agreement that actually there are so*  
24 *many trials going on, so, how do you work out what’s different and what’s new and*  
25 *what’s really going to turn the dial?”* (Supermarket E)

1 Respondents described the repetition observed between supermarkets in their interventions  
2 to promote healthy food. They highlighted the expense associated with conducting a  
3 supermarket intervention and how this investment would be best spent “*more wisely*”  
4 Respondents highlighted the potential utility of a resource that assimilated findings from  
5 active/previous interventions and provided best-practice guidance for evaluation:

6 *“I think sometimes there isn’t a clear, best practice guide out there of what we should*  
7 *be doing... There’re far too many people doing similar things. And actually, money*  
8 *could be used much more wisely to bring about the same amount of change.”*

9 (Supermarket G)

#### 10 Subtheme 3.2: Collaborating towards a healthier, more sustainable future

11 Several respondents indicated that they were willing to collaborate to share findings to  
12 achieve a healthier, more sustainable future. For instance,

13 *“And we’re wanting to work with partners on that. So external partners and internal*  
14 *partners across the business to say where should we focus our investments, what are*  
15 *the right things [interventions] to be working on.”* (Supermarket C)

16

17 Another respondent noted the expense of conducting an intervention and the assumption  
18 that it will benefit both the customer and the business. Therefore, evaluating the impact of  
19 interventions and sharing findings across retailers would be greatly beneficial, both for the  
20 customer (to find “*what works*”), but also for the business (to “*reduce costs*” associated with  
21 ineffective interventions):

22 *“It’s just learning what works really. It costs us money to run trials, but it would cost us*  
23 *even more if we were just to go out and do it permanently and it not work out. Even if*  
24 *we try something, it would be good to share it externally so we can see what works.*

25 *But yeah, it’s just industry working together and sharing learnings.”* (Supermarket D)



1 One respondent referred to their partnership with academic researchers as a “*journey*”, and  
2 this suggests awareness that sharing intervention learnings cross-retailer will likely be  
3 enduring, complex, and not without its complications.

4 *“I suppose it's about bringing [supermarket] research and academic research and the*  
5 *right partners together to help us on that journey.”* (Supermarket G)

6 Together, this suggests how retailers are essentially onboard with the process of improving  
7 the status quo of intervention data sharing.

8

#### 9 **Theme 4: Navigating the Undefined: Challenges in Promoting Sustainable Food**

##### 10 **Choices**

11 Almost all respondents highlighted the barrier to promoting sustainable food products. They  
12 indicated that, although they were willing to conduct interventions in support of sustainable  
13 food purchasing, the “*lack of a legal definition*” for claiming a food product was sustainable  
14 was discouraging efforts. As sustainability was a relatively new prioritisation, the  
15 infrastructure to endorse a sustainable diet appears to have not yet been created. To  
16 remedy this lag, most respondents claimed they use existing, legally “*certified standards*”  
17 (e.g., Fair Trade) as a proxy for official definitions of sustainability.

##### 18 Subtheme 4.1: “The Complexities of Defining and Promoting Sustainable Food Choices”

19 As illustrated in the following quotes, there was a lack of an official, universal definition for  
20 what constitutes a sustainable food product, as opposed to a healthy food product where  
21 there are numerous guidelines (e.g., Nutrient Profile Model (36), The Eatwell Guide):

22 *“Yeah, mainly I think we haven't got a definition. Unlike for health where we've got an*  
23 *own healthy brand logo, we haven't got an own brand sustainable logo.”* (Supermarket B)

24 Moreover, most respondents reflected on how the lack of an official definition had acted as a  
25 barrier to promoting foods as being a sustainable choice. Respondents recalled how other  
26 retailers had encountered fines from regulatory bodies (i.e., Advertising Standards Authority

1 (ASA; UK's independent regulator of advertising across all media)) for claims they had made  
2 regarding the sustainability of a food product. In the following quote, this respondent  
3 expressed a desire for tighter governance regarding the sustainability of food products so  
4 that they could promote products legally:

5 *“So, the ASA started to fine a lot of companies for making what they considered*  
6 *'misleading claims'. Sometimes that was absolutely true, but I think there also just*  
7 *needs to be some really clear boundaries and kind of frameworks for us to work to so*  
8 *that we know when we're developing products and communications of what we can*  
9 *say and what we can't.”* (Supermarket A)

10 This quote, along with the following quote, conveys how there was a buy-in from  
11 supermarkets to transform customers' baskets in favour of planetary health, but illustrates  
12 how supermarkets are constrained by the legality of supporting such changes and their  
13 wariness as a result. One respondent described how they had implemented interventions to  
14 increase the purchasing of food that could be viewed as both healthier and more sustainable  
15 (e.g., increase the sales of vegetarian sandwiches), but due to the lack of an official  
16 definition, they were unable to report their findings from a sustainability perspective:

17 *“I mean, we've definitely tried to have trials in healthy, sustainable food, but the*  
18 *problem is you can't talk about it so then where's the commercial benefit?”*  
19 (Supermarket C)

#### 20 Subtheme 4.2: “Estimating Sustainability through Accredited Sourcing and Proxy Measures”

21 Instead, as illustrated in the following quotes, respondents spoke of how they used a variety  
22 of legal “shortcuts” to define sustainable food products. For example, by using accredited  
23 sourcing and certified standards like Fair Trade and the Soil Association to legitimise one  
24 area relating to the sustainability of the product. However, as noted by the following  
25 respondent, these shortcuts were not considered a silver bullet and instead reflected a well-  
26 intentioned estimate using the available legal resources:

1           *“The best shortcuts that we have are things like certification schemes: Responsibly*  
2           *sourced? Fair trade? Because things like that, which are third-party organisations,*  
3           *validate one aspect of the sustainability of a product we could potentially use, but as I*  
4           *said, it's not without criticism that just because you are fairly traded doesn't*  
5           *necessarily mean you are, you know, environmentally sustainably sourced, in a*  
6           *recyclable packaging, for example. So, things like that can be a real issue.”*

7           (Supermarket A)

## 8    **Discussion**

9    Using interviews from seven UK supermarket nutritionists, representing 85% of the grocery  
10   market share, this study explored perspectives, views, and experiences on the acceptability  
11   and feasibility of using affordability interventions to support the purchasing of healthier and  
12   more sustainable foods. We identified four themes and 12 sub-themes. The first theme  
13   suggested that there was the perception that supermarket retailers prioritise health and  
14   sustainability. However, the remaining three themes reflected the complexity of achieving  
15   this intention, as based on respondents' experiences, there appeared to be several  
16   challenges that were encountered when trying to promote these foods, including profitability  
17   concerns, unpredictability of intervention outcomes, control over own-brand products versus  
18   branded, a perceived intention-behaviour gap, and a belief that supermarkets are doing  
19   these interventions already. Additionally, differences in how supermarkets approach  
20   intervention evaluation also emerged, and a need for an operationalised definition for  
21   sustainable food products.

22   Every respondent adopted the view that their businesses' approach to health and  
23   sustainability was *“embedded in their identity”* as a supermarket. This perception is at odds  
24   with public perceptions of supermarkets (and the food industry in general) where they are  
25   often viewed as large contributors to disease and ill-health (37,38). Research indicates that  
26   supermarkets show a price-promotion (i.e., total price reductions and multi-buy) bias towards  
27   less healthy foods (i.e., HFSS (39), where these price-promotions encourage additional

1 purchases and greater purchase volumes of less healthy food. However, despite  
2 supermarkets' apparent health-halo, our findings do align with previous literature who argue  
3 that supermarkets have a split corporate responsibility to health and sustainability (40);  
4 whilst strategies used by supermarkets may contribute to public health problems, they are  
5 simultaneously engaging in activities to prevent them.

6 Activities that are implemented by supermarkets to prevent public health problems are an  
7 example of supermarket's approach to Corporate Social Responsibility (CSR). CSR  
8 approaches differ based on corporate motivations; they can be viewed as either instrumental  
9 (i.e., CSR to generate profit), ethical (i.e., CSR is an ethical obligation to society), integrative  
10 (i.e., supermarkets rely on society and so CSR is needed to support continued success), or  
11 political (i.e., supermarkets possess a degree of power that demands they act responsibly  
12 for their CSR) (41,42). In our study, supermarkets' approach to CSR appeared strongly  
13 aligned with ethical and political theories, as they have an "*ethical obligation*" for their  
14 customers in relation to health and sustainability, which in part is based on being cognisant  
15 of the power they possess in the food industry. This finding contrasts with previous work,  
16 where in a qualitative study of Danish supermarket managers, supermarket staff assigned  
17 the main responsibility for healthy living on the individual customer (31). Instead, our findings  
18 align with those who have shown most retailers display (publicly espouse) responsibility for  
19 the health of their community and customers (32,43). However, in Martinez et al. (2018)<sup>32</sup>  
20 they also report that supermarkets may promote healthier food to generate profit (i.e.,  
21 instrumental theory), which differs with our respondents' belief that their supermarkets'  
22 approach to health and sustainability are ethically based. It is possible that this discrepancy  
23 is attributed to the fact that only supermarket nutritionists provided their perspectives in our  
24 sample. In comparison, Martinez et al. (2018)<sup>32</sup> analysed a variety of perspectives from  
25 different positions across the supermarket, including corporate managers whose view might  
26 differ.

1 An important finding from our work relates to the number of complexities associated with  
2 promoting healthier food in the supermarket. Our previous work with the lived experience of  
3 PLWO and FI advocates for more interventions based on price and incentivisation (28).  
4 However, the current findings suggest that this recommendation does not acknowledge the  
5 barriers to implementation that are encountered by supermarkets, from the perspective of a  
6 supermarket nutritionist. Firstly, we were interested to note the strongly held belief of most  
7 respondents that supermarkets were already “*do[ing] affordability interventions*” on healthier  
8 food, such as loyalty card pricing. This finding also complements other research where  
9 supermarket retailers have described, from their perspective, that consumers were already  
10 provided with many opportunities to make healthier food choices (31). However, our  
11 previous work suggests this finding contrasts with the views of customers. For example,  
12 Hunter et al. (2024)<sup>29</sup> highlighted the difficulties faced by PLWO and FI with using existing  
13 affordability interventions in supermarkets, such as how deals on foods fluctuate. Together  
14 our findings suggest that current affordability interventions to support the purchasing of  
15 healthier food do not resonate with the intended beneficiaries of affordability interventions  
16 and this disconnect merits further exploration in future supermarket intervention  
17 development.

18 Another challenge that was mentioned by our respondents was the viability of healthier food  
19 promotion from a commercial perspective. Almost all respondents highlighted the low profit  
20 margins that were associated with healthier food promotion in comparison with promoting  
21 less healthy products. Indeed, previous literature has highlighted how return on investment is  
22 a central consideration to executives when employing an intervention (44). Our findings  
23 underscore the contentious conundrum that is faced by food retailers, from the perspective  
24 of supermarket nutritionists, between wanting to provide customers with healthier food using  
25 affordability promotions, whilst also recognising that a supermarket is a business and cannot  
26 act entirely charitably (32,45).

1           An additional challenge noted by our respondents was the uncertainty regarding the  
2 performance of healthier food interventions in terms of sales, where unexpected intervention  
3 results tended to be attributed to the complexity of the supermarket environment.  
4 Specifically, the nutritionists reported that health interventions often ran alongside other  
5 marketing interventions in the store which resulted in competing messaging for the  
6 customer. This finding aligns with those from a process evaluation of supermarket staff in the  
7 Eat Well @ IGA trial (a 12-month randomised controlled trial to increase the healthiness of  
8 customer baskets and sales of healthy food in Australia) where it was noted that multiple  
9 contextual factors (e.g., traditional business operations focussed on sales/profitability) in the  
10 supermarket were found to influence intervention implementation (44). Therefore, there  
11 needs to be an appreciation when conducting healthier food interventions for the complexity  
12 of the supermarket environment. Indeed, this supposition is closely aligned with another  
13 theme we identified that related to supermarket intervention evaluation. At present,  
14 supermarket nutritionists' perspectives of their retailer's approach to intervention evaluations  
15 are mainly light-touch and do not address the complexities of the real supermarket  
16 environment. Therefore, this suggests that there should be a shift towards practice-based  
17 evidence (46), where the complexities of the supermarket environment are considered when  
18 designing, implementing, and evaluating healthy food retail.

19           Given that the respondents in the current study were aligned on their vision for  
20 enabling customer health, it is conceivable that restructuring the supermarket environment  
21 so that it is more synergistic (i.e., complementary) in its health messaging may better  
22 support customers to purchase healthier food. Indeed, previous literature into healthy choice  
23 architecture in supermarkets has found promising results (47). By doing so, this may then  
24 prevent unexpected health intervention outcomes (e.g., reduction in product sales), which  
25 are ultimately costly to the business. Indeed, emerging findings from the FIO Food project  
26 suggest that this is a common complaint from PLWO and FI who report that their shopping  
27 experiences are overwhelming with many different contradictory messages (i.e., promotions

1 on less healthy food), and food aisles being constantly reorganised, which makes it difficult  
2 to purchase healthier food (34). Similarly, Gustafson et al. (2018)<sup>48</sup> suggested that there are  
3 cognitive demands placed on shoppers when shopping in-store for healthier food, and for  
4 those shoppers who are living on a low income, these demands are greater due to financial  
5 constraints. Therefore, the lived experience appears to corroborate the concerns held by the  
6 supermarket retailers with regards to competing messaging in store.

7 Many respondents also highlighted the lack of control they perceived they held over  
8 products which were not from their own brand. Own brand products typically include fruit and  
9 vegetables, meaning that supermarkets can more easily manipulate promotional activity  
10 (albeit funded by the retailer themselves) and the allocated shelf space given to the product  
11 (49). However, large, established suppliers who supply well-known household food brands,  
12 of which many can be considered HFSS (50), are able to negotiate promotional activity and  
13 the allocated shelf space of their products (51,52), particularly during seasons and key  
14 events throughout the year (e.g., Easter, Halloween) (50). Therefore, for example, it is  
15 conceivable that discounting of branded confectionary that have been negotiated could be at  
16 odds (in terms of promoting a healthier diet) with the promotions of own brand fruit and  
17 vegetables, especially given that fruit and vegetable promotions are funded by the retailer  
18 rather than suppliers who notoriously have larger promotional budgets (50). Thus, due to  
19 consumer demand for certain branded products that is reinforced by complex competitive  
20 arrangements between supermarkets and suppliers, it is often not commercially viable to  
21 restrict the supply or promotion of branded goods in supermarkets (53). Furthermore, it is  
22 imperative that academics and policy makers consider the extent to which supermarkets are  
23 culpable for the products that are on promotion. There is a complex commercial food system  
24 that needs to be considered if we are to create a healthier and more sustainable  
25 supermarket environment, which is also commercially viable (54). Indeed, when  
26 governments have imposed mandatory regulations on suppliers, such as in the UK with the  
27 Soft Drinks Industry Levy, which taxed manufacturers who did not reformulate their

1 beverages to reduce the sugar content, this very different approach has resulted in  
2 promising results by significantly reducing sugar intake in children and adults (55).

3 The supermarket nutritionists in our study highlighted that there was a perceived intention-  
4 behaviour gap in customers' healthy food purchasing. Specifically, when health interventions  
5 were implemented based reducing prices of healthier food), there was not the expected  
6 increase in sales of the promoted product. This finding is in line with Martinez et al. (2018)<sup>32</sup>,  
7 where retailers located in low-income areas indicated that whilst price was their customers'  
8 greatest barrier to purchasing healthier items, there was no guarantee that implementing  
9 price reductions would result in an increase in sales. Instead, they therefore inferred (rightly  
10 or wrongly) that the main driver of purchasing behaviour was not price, but instead demand -  
11 believing that customers did not ultimately want the healthier food. Indeed, while this  
12 observation could be explained by it reflecting customers' food preferences and the risk of  
13 food waste associated with perishable, healthier food, especially in families with children  
14 (56), it could equally reflect the barriers encountered from the food environment, such as  
15 convenience, time, and space to prepare (57). Similarly, Kim et al. (2017)<sup>53</sup> reported that  
16 retailers were hesitant to stock healthier foods as they were considered a 'high-risk  
17 investment' as by doing so can result in loss of sales. Therefore, this suggests that health  
18 interventions that operate using price levers to promote healthier food are not the panacea.  
19 Instead, more complex, multi-lever interventions may be more effective in increasing  
20 healthier, more sustainable food sales, which would ultimately benefit both the customer  
21 (i.e., customer health) and the retailer (i.e. increased sales). However, to achieve this would  
22 require a shift in thinking and working, including long term investment and adequate funding  
23 (58). Indeed, in a randomised controlled trial of people living with low income in an area of  
24 high obesity prevalence in the United States, employing a health intervention that used  
25 promotion (food samples), education (recipe cards), placement (aisle-end cap placement),  
26 and price (\$1 discount coupon for buying promoted fruit and vegetables) to encourage fruit  
27 and vegetable purchasing, they found significant increases in purchasing of these foods



1 (59). Interventions that use multiple levers perhaps are more likely to affect multiple aspects  
2 of the customer's in-store experience and this reinforces the previous point that  
3 supermarkets' in-store environments should be conducive with encouraging healthier, more  
4 sustainable food purchasing.

5 When discussing their approach to health and sustainability interventions, one insight that  
6 emerged from respondents was that intervention evaluation varied widely. Some  
7 respondents suggested their supermarkets were more advanced with how in-depth their  
8 approaches to intervention evaluation were and with how often they conducted intervention  
9 evaluation, whereas other respondents mentioned they were actively running interventions  
10 without assessing their impact. Vogel et al. (2019)<sup>60</sup> synthesised their research teams'  
11 experiences of working with supermarket chains to evaluate strategies to promote healthy  
12 eating. They similarly recommended that supermarket intervention research should use  
13 more robust study designs, but acknowledged that this would be difficult in commercially,  
14 competitive real-world settings. Therefore, there is a clear need for a best practice guide for  
15 retailers that provides support and guidance with how to design, conduct, and evaluate  
16 health interventions to produce reproducible, transparent findings that can facilitate positive,  
17 meaningful change to customers' purchasing behaviour.

18 Despite there being challenges with the evaluation of health (and sustainability)  
19 interventions, all respondents expressed a desire to work with other retailers and academics  
20 to enable knowledge mobilisation in this space. This is complementary with the concept of  
21 co-creation (i.e., collaborative approach of creative problem-solving with multiple  
22 stakeholders), and previous research has shown that this approach is necessitated in health  
23 interventions design in supermarkets (31,44,61,62). Therefore, providing retailers with the  
24 appropriate infrastructure to facilitate this collaboration warrants further investigation.

25 Although the current study was interested in supermarket nutritionists' experiences of  
26 promoting both healthier and sustainable food purchases, most respondents tended to report  
27 on their experiences of health interventions rather than sustainability. It became apparent

1 throughout the interviews that this was a result of a lack of a standardised definition for what  
2 legally constituted a sustainable food product. Consequently, this resulted in an inability to  
3 substantiate claims related to whether a product was 'more' sustainable than another  
4 product, unlike with a healthier food product where there are established mechanisms to  
5 substantiate such claims, for example, HFSS status (36), or the multiple traffic light scheme  
6 (63). Respondents were overtly aware of the strict stipulations surrounding environmental  
7 claims (64) and thus the threat of legal proceedings were flagged as a major barrier to  
8 implementing sustainable food interventions. Nevertheless, respondents noted their  
9 supermarkets were proactive in their response to the complexity of defining a sustainable  
10 product by utilising accredited sourcing (e.g., fair trade) of a product, or by using government  
11 dietary recommendations such as the Eatwell Guide, to sensibly recommend a diet that is in  
12 favour of health and also sustainability (65). Therefore, this speaks to the need for upstream  
13 change (i.e., regulations) to support retailers with the promotion of healthier and more  
14 sustainable food in supermarkets.

15 The current study had numerous strengths; particularly, it collected insights from senior  
16 supermarket nutritionists from supermarkets who represented 85% of the grocery market  
17 share in the UK, therefore providing a relatively representative snapshot of UK supermarket  
18 retail sector. However, as is characteristic with thematic analysis, themes reflect patterns of  
19 meaning from codes across data. Therefore, if only one code is apparent in one  
20 supermarket's data, it is not likely strong enough to warrant a standalone theme (35). Whilst  
21 we were able to collect data from nutritionists from multiple retailers, the discounter  
22 supermarkets were under-represented. Thus, as these retail entities operate using a  
23 different business model to traditional supermarkets, it would be interesting in future  
24 research to explore exclusively the perspectives and experiences of discounter  
25 supermarkets in relation to affordability interventions and healthier and more sustainable  
26 food promotion. This is because discounters are already offering their products at the lowest  
27 possible price, and it is these supermarkets who are often frequented by vulnerable groups

1 (29). Additionally, the current research explored only the perspectives of supermarket  
2 nutritionists, which excluded the perspectives of other members in the organisation, such as  
3 from the commercial team, or from supermarket store managers, whose perspectives may  
4 differ. Nevertheless, this paper advances the existing literature into healthier and more  
5 sustainable food promotion in supermarkets by adding the perspective of the retailer, albeit  
6 the supermarket nutritionist. This perspective has largely been ignored in previous research  
7 despite the pivotal role the food retail sector plays in enabling or constraining individual food  
8 purchase choices and the proactive role this can play in addressing dietary inequalities.

## 9 **Conclusion**

10 The current study has illuminated how the implementation of affordability interventions to  
11 support customers to purchase healthier and more sustainable food (mainly healthier food)  
12 requires the retailer to consider multiple multifaceted challenges. Supermarkets, therefore,  
13 are in a paradoxical situation. Despite a genuine commitment to promoting population and  
14 planetary health, and a willingness to collaborate with academics and other food retailers to  
15 generate meaningful interventions to support customers, their efforts are often hindered by  
16 financial, logistical, commercial and behavioural challenges. These findings underscore the  
17 need for a more nuanced understanding of the retail environment and calls for collaborative  
18 efforts to create viable interventions that align population and planetary health objectives  
19 with economic realities. To achieve substantial and lasting change, our research suggests  
20 there is a compelling need for upstream intervention which mandates and supports  
21 interventions that use multiple levers including but not limited to addressing affordability.  
22 Policy measures and regulatory frameworks should be designed to incentivise healthier, and  
23 more sustainable retail which also mitigate the financial risks associated with affordability  
24 interventions.

## 25 **List of abbreviations**

- 26       • PLWO – people living with obesity

- 1           • FI – food insecurity

2    **Declarations**

3    **Ethics approval and consent to participate**

4    Written consent was obtained prior to the interview via email to RAS. Ethical approval was  
5    obtained from the University of Liverpool Research Ethics Committee, Ethics number 12622.

6    **Consent for publication**

7    Not applicable.

8    **Clinical trial number**

9    Not applicable.

10   **Availability of data and materials**

11   The datasets used and/or analysed during the current study are available from the  
12   corresponding author on reasonable request.

13   **Competing interests**

14   AB reports honoraria from Novo Nordisk, Office of Health Improvement and Disparity,  
15   Johnson and Johnson and Obesity UK outside the submitted work and is on the Medical  
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4 **Rebecca A. Stone:** Conceptualization, Data curation, Formal analysis, Investigation,  
5 Methodology, Project administration, Writing – original draft. **Adrian Brown:** Funding  
6 acquisition, Writing – review & editing. **Flora Douglas:** Funding acquisition, Methodology,  
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11 acquisition, Writing – review & editing. **Hannah Skeggs:** Methodology, Resources, Writing –  
12 review & editing. **Charlotte A. Hardman:** Conceptualization, Formal analysis, Funding  
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- 9
- 10

## Supplementary Material 1

### Interview Schedule

#### Introduction to the topic and instructions:

Hello and welcome to our interview. Thank for agreeing to take part. My name is Dr Rebecca Stone and I am a postdoctoral researcher working at the University of Liverpool on the FIO Food project, I will be facilitating the interview today. Before we start do you have any questions or concerns you'd like to raise that have occurred to you since you agreed to take part?

[Answer any questions]

Super.

So, as you have already heard, the FIO Food project is concerned with helping people living with obesity and food insecurity shop more easily for healthier, more sustainable foods in the supermarket, both online and in-store. We have recently conducted a large online survey with people living with obesity and food insecurity to understand their experiences of shopping for healthy and sustainable food in retail settings. Within this survey we were able to gather some insights into what this group of people thought food retailers could do to enable them to purchase these foods more easily. Therefore, we are interested in understanding your company's views about health and sustainability, and on the adoption/integration of some/all of the key recommendations obtained from survey.

The interview should last about 30 minutes; however, this depends on how much or how little you feel you have to say. At the end of the interview there will be time for questions if you have any about what you've heard throughout the interview. Let me just remind you that I will be recording today's interview, but your response will be treated with full confidentiality and any potentially identifying information you share, such as names or places, will be removed to ensure anonymity.

Does that all sound ok? Great.

[Answer any questions]

#### Interview Questions

1. How does X decide on/define what a healthy food product is?
2. How does X decide on/define what a sustainable food product is?
3. Do you have a strategy for health and/or sustainability at X?
  - o If yes:
    - What is it?
    - Is health or sustainability a priority for X?
    - Who is accountable for delivering the commitments/ strategy on health and sustainability?
      - Board level?
      - Junior level?
    - Do you have targets/ commitments to track progress against your strategy?

- Does this include influence over your own-label and branded products sold?
  - What happens if you do not meet health or sustainability targets?
    - Is this linked to bonus?
  - How many people in the business do you believe would have health and sustainability measures built into their objectives?
    - o If no: why do you think this is?
4. What mechanisms have you used in the past to drive healthier food sales (strategic level –levers)
- o How did it work? / how did you evaluate this?
  - o What went well?
  - o What could have gone better?
  - o If resource wasn't a concern, what trials would you like to trial either because you feel they could be impactful or because there is a gap in the evidence at present?
    - o What are the barriers to running these trials today?
      - Prompt: Is it funding, consumer ask, business case?
  - o Does X intend to run trials again in future?
    - o If Yes – Why / What are the business benefits?
    - o If No - Why not?
      - Prompt: Is it funding, consumer ask, business case?
- If they haven't:
- Why have you not? What have been the barriers to these trials?
  - Do you have plans to?
  - What would enable or prompt X to run interventions in the future?
5. What mechanisms have you used in the past to drive sustainable food sales with consumers (strategic level –levers)
- o How did it work? / how did you evaluate this?
  - o What went well?
  - o What could have gone better?
  - o If resource wasn't a concern, what trials would you like to trial either because you feel they could be impactful or because there is a gap in the evidence at present?
    - o What are the barriers to running these trials today?
      - Lack of frameworks?
  - o Does X intend to run trials again in future?
    - o If Yes – Why / What are the business benefits?
    - o If No - Why not?
      - Prompt: Is it funding, consumer ask, business case?
- If they haven't:
- Why have you not? What have been the barriers to these trials?
  - Do you have plans to?
  - What would enable or prompt X to run interventions in the future?
6. As I said at the start, we have conducted a large survey of PLWO and FI. Our respondents indicated that interventions/marketing activations based on price/incentivisation would be most helpful in helping them to purchase healthier food



(for example: offers and promotions on healthy food, rewards on supermarket loyalty card when purchasing healthy food, personalised money off promotions).

- o What do you think of these interventions/marketing activations?
  - o Do you think they could work in X?
    - If yes – why?
      - o Is this based on previous experience?
    - If no – why?
      - o What are the barriers to doing price?
      - o Is this based on previous experience?
7. The survey also indicated that interventions/market activations based on price/incentivisation would be most helpful in helping them to purchase more sustainable food (for example: offers and promotions on sustainable food, rewards on supermarket loyalty card when purchasing sustainable food).
- o What do you think of these interventions/market activations?
  - o Do you think they could work in X?
    - If yes – why?
      - o Is this based on previous experience?
    - If no – why?
      - o What are the barriers to doing price?
      - o Is this based on previous experience?
8. Do you think there is a profitable mechanism to run interventions on price and incentivisation long term?
- o if so- why?
  - o If not – why?

Concluding the session:

Great stuff, thanks! Ok, it looks like we've come to the end of the interview. Do you have any other questions before we finish?

[Answer any questions]

Don't worry if you have none right now, you have my email address so please feel free to contact me with anything. Thank you so much again for your time today, it is greatly appreciated.