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Exploration of Barriers and Facilitators to Healthy Eating in UK Truck Drivers

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ABSTRACT

Background: The working environment of truck drivers promotes unhealthy lifestyle behaviours including physical inactivity and poor dietary choices. This leads to high levels of chronic diseases and a reduced life expectancy compared to other occupational groups. However, little is known about how drivers in the UK perceive their working environment and how this affects their food choices. This study aimed to gain a better understanding of long-haul (8–10-hour shifts) truck drivers' needs regarding healthy food choices whilst on the road to better inform future health promotion programmes and policy needs.

Methods: Individual semi-structured interviews were conducted, allowing an in-depth exploration of truck drivers' experiences. The interview guide was grounded within the COM-B model and theoretical domains framework. Audio recordings were anonymised and transcribed verbatim and data analysed using thematic analysis.

Results: Ten drivers (8 male) were interviewed with a mean age of 49 years (SD 9.7). Frequently mentioned barriers to healthy eating were limited availability of affordable healthy food options at truck stops, food storage limitations, and limited time for food preparation. Commonly reported facilitators to improve drivers' diet were flexible break times, shorter shifts, secure parking places and/or better-equipped vehicles.

Conclusions: Limited availability of healthy food options, high costs, poor facilities within rest areas, long working hours/shifts, and lack of food storage and preparation time, negatively impacts UK truck drivers' eating behaviours. This study highlights that multi-component interventions targeting the individual, environment and policy, are ultimately needed to improve truck drivers' working conditions and health.

1. Introduction

The working environment of long-haul truck drivers promotes unhealthy lifestyle behaviors including physical inactivity, enforced sedentarism, and poor dietary choices. High levels of stress due to pressured delivery schedules; long, variable working hours leading to sleep deprivation; and shift work are also common challenges for this profession [1]. The exposure to these risk factors culminates in drivers experiencing increased risk of crashes [2], and higher levels of long-term conditions such as obesity, heart disease, type 2 diabetes, and a reduced life expectancy in comparison with other occupational groups [2–4]. Higher levels of overweight and obesity are observed in UK truck drivers, in comparison with the general population, with the age-standardized prevalence of severe obesity [body mass index (BMI) $\geq$40 kg/m^2] more than two-fold greater than that seen in the general population (5% vs. 2%) [5] highlighting substantial health inequalities.

Additionally, UK truck drivers are an ageing workforce, with more drivers retiring than new drivers recruited [6], resulting in a chronic truck driver shortage. To address the UK driver shortage,

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the UK government published a plan with 33 actions, including simplifying the requirements to become a truck driver, investing in roadside facilities such as showers, toilets and eating areas, and the provision of more parking places [7]. Health promotion programmes within this workforce have also been developed for UK-based drivers. For example, the Structured Health Intervention for Truckers (SHIFT, UK) was recently evaluated using a cluster randomized controlled trial [8] including 382 heavy goods vehicle (HGV) drivers across 25 different sites. SHIFT (UK) was designed to promote healthy lifestyle behaviors such as increasing physical activity and improving eating habits in HGV drivers. Whilst the programme had a positive impact on drivers' activity levels, no significant changes were seen in dietary behaviors, suggesting further work is needed to beneficially impact drivers' diets [8]. In addition to the SHIFT programme, informational campaigns to encourage drivers to choose healthier options throughout long shifts have been launched by several UK companies [9,10]. However, to attract new drivers to the profession, driver health and well-being, in addition to improvements to drivers' working environments, should be prioritized. To date, UK truck drivers have been underserved in terms of health promotion efforts.

Evidence from US, Australian, and German truck drivers has shown that drivers' diets typically contain energy dense food and drinks, with low nutritious values, purchased from roadside facilities [3,11–13]. Data from the UK also show a low intake of fruit and vegetables per day and low dietary quality scores in truck drivers [14]. Drivers in the US, Australia, and Canada report that limited access to healthy food options and wide access to unhealthy food present the main barriers to healthy eating [15,16]. Additionally, limited options to store the food in the truck, limited cooking facilities, and limited parking spaces have also been mentioned as barriers by those drivers. No audits of retail food outlets or environments frequented by commercial drivers have been conducted in the UK, with very limited information on drivers' food outlets available internationally. In the US, a pilot study of 16 truck stops revealed that none provided any exercise facilities, and 50% and 37% did not offer fresh fruit or vegetables, respectively, in their restaurants or shops [17]. Drivers from a qualitative study in Australia confirmed the lack of access to healthy food on the road at truck stops [16]. They also reported being unable to access fresh produce from supermarkets, due to parking regulations in each state.

Little is known about how UK truck drivers perceive their working environments and how this affects their food choices, and few international studies have used a theoretical approach to investigate this. The behavior change wheel [18] is a theoretical framework that guides researchers to understand what needs to change for the desired behavior to be achieved. At the centre of the wheel sits the Capability, Opportunity, Motivation–Behaviour (COM-B) model. According to COM-B, changing behavior involves changing one or more of the three essential components: "capability" (physical and psychological), "opportunity" (physical and social), and "motivation" (automatic and reflective). These three components can be further broken down into separate domains using the Theoretical Domains Framework (TDF) [19]. The TDF describes the barriers or facilitators that can be faced by an individual. The model has been used in a previous study investigating the perspectives on worksite physical activities in this population [20] and can be used to inform an appropriate intervention to improve drivers' diet in the future.

The aim of this study was, therefore, to gain a better understanding of UK truck drivers' perceptions on barriers and facilitators to healthy food choices using the COM-B model. To address this overarching research question, the specific objectives were to (1) understand eating habits and reasoning for food choices from the perspective of truck drivers; and (2) identify barriers and facilitators that make it difficult or easier for truck drivers to eat a healthy diet whilst at work. This will help inform future health promotion programmes and policy needs to improve truck drivers' working environments.

2. Methods

2.1. Study design

To investigate the barriers and facilitators of healthy eating, we conducted individual semi-structured qualitative interviews, allowing an in-depth exploration of UK truck drivers' experiences using an interview guide (Supplementary table 1). The research was part of a PhD programme, and interviews were conducted by a female PhD student (KR) as part of an academic exercise after receiving training on qualitative research methods. The interview guide was informed by the COM-B model and the TDF and consisted of open-ended questions and probes to elaborate answers for clarification. The key topics covered in the guide included the following: perceptions of a healthy diet; barriers and facilitators to healthy eating; and potential policy changes required. The full interview guide can be found in the appendix. Ethical approval was obtained from the Loughborough University Ethics Committee (Reference: 13462).

2.2. Study population

Participants were eligible if they were long-haul truck drivers who do few delivery stops during each shift, drive more than 250 miles per day, and are currently working in the UK with no further exclusion criteria. The study was advertised via logistics operators and social media. Additionally, drivers were recruited through an ongoing survey and were asked to provide their email address if interested in taking part in the interviews. Out of 143 survey participants, 82 drivers replied stating they were interested in being involved in interviews and were contacted three times via email. Of these, only 10 drivers replied. Therefore, an opportunistic sample of drivers was recruited between March and August 2023 until data saturation was attained [21]. All participants had received the information sheet and provided written consent. Participating drivers were offered the chance to win a Fitbit activity tracker by taking part in an interview.

2.3. Data collection

Following one pilot interview, minor changes in terms of word choices were made on the interview guide to enhance understanding. Data collection took place between April and August 2023. Interviews were conducted one-on-one by the same researcher (KR; PhD) via phone call where interviewees spoke to the interviewer for the first time. Interviews were audio recorded with participants' permission and lasted around 40 minutes. Basic demographic and job-related questions including age, height and weight, diagnosed medical conditions, years worked as a truck driver, and shift schedule were asked at the beginning of the interview. Data saturation was monitored during data collection, discussed with another experienced qualitative researcher (ES), and achieved when no new codes and themes were identified during data analysis [21].

2.4. Analysis

Audio records were anonymized and transcribed verbatim by one researcher (KR). Data were analyzed using thematic analysis

according to Braun and Clarke [22]. One author (KR) inductively analyzed the transcripts to generate codes, which were then combined to generate themes. Throughout this process, a researcher with 10 years of experience in qualitative research acted as a critical friend (ES) [23] and challenged the author's beliefs and offered feedback in regular meetings. Afterward, themes were deductively coded into the COM-B model by KR and discussed with the critical friend (ES). NVivo version 1.7.1 was used for qualitative data analysis.

3. Results

3.1. Study population

Data saturation was achieved after 9 interviews and no new codes were generated after conducting a 10th interview. The study population consisted of eight male and two female truck drivers {mean age: 49 years [standard deviation (SD) 9.78]}. The participants worked for 19.1 (SD 4.7) years as a truck driver. Five worked during the day, four worked night shifts, and one worked a rotating shift pattern. Based on self-reported weight/height, seven drivers were overweight or had obesity (mean BMI 27.7 kg/m^2 (SD 6.6)).

Four themes (with 15 subthemes) were identified including a description of dietary patterns, barriers of healthy eating, facilitators of healthy eating, and suggested policy changes (Fig. 1). All subthemes were mapped onto the components of the COM-B model and are presented accordingly.

4. Capability

4.1. Psychological capability

4.1.1. Theme 1: Perception of healthy eating

A definition of a healthy diet was often described by drivers as balanced, varied, and fresh. Drivers' highlighted that products should be unprocessed, and low in sugar and fat. The most common theme mentioned was eating a variety of fruits and vegetables daily.

> *"Ohh, lots more fruit than I eat. Lots more vegetables, well varied. Not so much processed food, I guess. Fresh everything. That you do it from scratch yourself. So you know what's going into it. What's not." (participant 1)*

4.1.2. Theme 2: Description of current diet

However, when describing their diets, most drivers reported having an unhealthy diet. The most frequently mentioned meals reported at work were sandwiches, fast food, or ready meals.

> *"Yeah I take three meals and the rest of the time I eat out. Sometimes I eat fast food or I go to like a truck stop and get a proper meal or maybe get fish and chips from a fish and chips shop." (Participant 6)*

Some mentioned eating whilst driving. Most choosing unhealthy options as snacks, like chocolate bars, crisps, biscuits or cakes. However, a few mentioned bringing fruits and vegetables to work to eat as a snack.

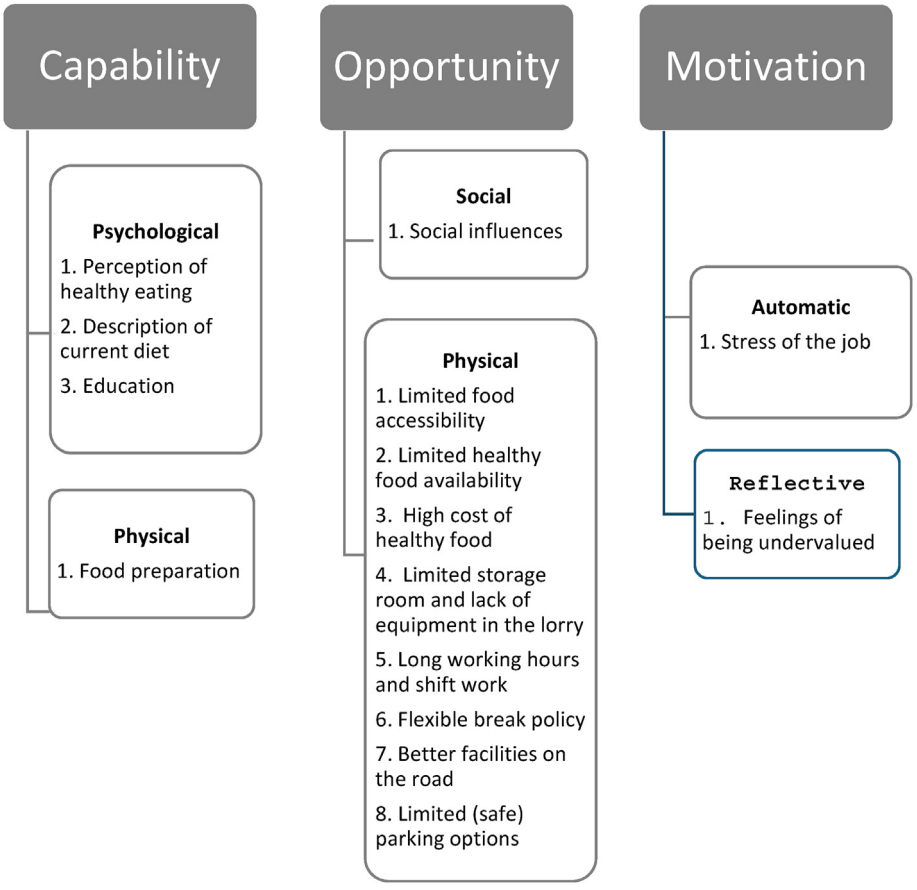

Fig. 1. Hierarchy of the (Capability, Opportunity, Motivation–Behaviour) COM-B model with subthemes.

"I will have crisps, chocolate, some fruits…I am eating a lot of fruit. But I will snack through that…there are no fixed times for it." (Participant 1)

4.1.3. Theme 3: Education on healthier dietary choices

Drivers highlighted a need for more education to better understand the consequences for their health by eating an unhealthy diet. Additionally, they wish for more education on healthy eating strategies and food preparation specifically tailored to their needs. A greater knowledge on diet was mentioned as being a facilitator to healthier eating behaviors. However, drivers reported not receiving any information or insufficient information on this in their training courses.

"Yeah, I think it's more about education, yeah. In making them understand the importance cause it's one of those things that a lot of people think it's fine." (Participant 1)

4.2. Physical capability

4.2.1. Theme 1: Food preparation

Drivers reported eating healthier if they prepare food at home or if they bring ingredients with them to prepare meals in their truck, which needs good planning, facilities, discipline, and time. Drivers who have developed more effective strategies for food preparation tended to report healthier eating than others. They reported cooking meals in the truck that are easy to prepare and do not need many ingredients.

"You have to be more organised. You have to plan your you know you have to like do your shopping on a Sunday and plan your eating much more thoroughly. And then you have to just not be tempted to eat rubbish." (Participant 2)

"I will just microwave it at home and then I will put it in a flask to keep it warm for a couple of hours anyway." (Participant 10)

5. Opportunity

5.1. Social opportunity

5.1.1. Theme 1: Influences on social network

Most drivers reported that other people do not influence their eating behavior.

"The Colleagues…colleagues don't influence me at all. I don't really care…. No, that wouldn't affect me. Not I'm not one of those guys that worry about what other people think." (Participant 6)

However, a few mentioned being negatively affected by their peers. Drivers chose to eat with coworkers for social interaction but tended to choose more unhealthy options when they were eating in a group as opposed to alone in the cab. If they chose to cook in the cab to prepare a healthy option they therefore need to sacrifice the social connection with their coworkers.

"So sometimes there might be a job where 10 of us parked up in the same place or at the same truck stop. And because most of us are quite sociable, we will go and talk to each other. But then it's a case of…because everyone's talking and chatting. Everyone just goes and gets some food, some fast food or something like that. So everyone sits down together and eats. So, whereas you're feeling a bit better, because you're being a bit more sociable, you tend not to be as healthy because if you go in, so go back to your cabin cook on your own for half an hour you are sort of excluding yourself from everything else that was going on?" (Participant 5)

5.2. Physical opportunity

5.2.1. Theme 1: Limited food accessibility

Night drivers commonly mentioned having no food options during their shifts as most service stations and cafeterias in their depots are closed or the fresh food has already been sold out by the time they have their breaks.

"Most things will be closed at night or what they have available is rubbish. So by the time we get there, 22 to midnight, all that stuff that they had fresh from the morning is gone and what they've got left is really quite lacklustre. To put it mildly. You will have, you know, the old sandwich. All I would get would be crisps or chocolate. And that's it. There isn't a phenomenal amount of options. Sometimes you've got even less choice because they won't even let you in." (Participant 10)

Therefore, most drivers reported eating healthier when they are at home, with more access to a variety of food or a partner who is preparing healthy meals for them.

"Yes, because I've got the choice haven't I. And I've actually got control. Whereas when I am at work, the road and the time controls you. The availability for what at a time? Have you got the time? Are you in the right place?" (Participant 4)

During the COVID pandemic, drivers of all shifts were forced to prepare food themselves as all service stations were closed, therefore positively changing eating habits of some.

"But yeah, a lot of places were just…a lot of places were closed. So you had no option but to bring food from home and cook it yourself. And most people do generally eat healthier at home or eat reasonably healthy at home. So I think it did help a lot of people." (Participant 5)

However, most drivers reverted back to old habits after the pandemic as unhealthy options were available again.

"I guess long term I've slipped back into easy availability of stuff so it changes in that respect….I don't have to have more preparation anymore." (Participant 1)

5.2.2. Theme 2: Limited healthy food availability

A major barrier to healthy eating that emerged was limited availability of healthy food options at service stations and depots. Drivers reported not having any or not enough healthy food options in comparison to a large variety of unhealthy ones.

"I went to a large service station the other day and they didn't have any fresh fruit. But they had aisles and aisles of chocolate and crap. You know, they're like, well, you know, big bags of crisps and things like that, you know. But there was no fresh fruit there at all." (Participant 2)

Drivers described having healthy food available in the working environment as a facilitator to healthy eating. Some reported choosing healthier foods when accessible in either service stations or canteens.

"They (Marks and Spencer's) have good, so I think they have better selections. So last night I had feta cheese and pasta and tomato salad with water and a yoghurt." (Participant 2)

5.2.3. Theme 3: High cost of healthy food

Another barrier frequently highlighted was the cost of food, which is much higher in service stations than supermarkets, especially for healthy options. Drivers who cannot afford or want to

avoid the expense of food during working hours are forced to bring their own food from home as they have no opportunity to access a supermarket with reasonable prices. Food vouchers from the employer do not cover the costs of a healthy meal in a service station creating a barrier for drivers to choose the healthier option if they need to cover the additional costs.

"The only thing they have is a Marks and Spencers shop, which obviously does sell healthy sorts of alternatives or things that you can make yourself. So, but the cost of that is astronomical compared to buying it in a sort of regular supermarket." (Participant 5)

5.2.4. Theme 4: Limited storage room and lack of equipment in the lorry

Drivers who stay out overnight described not having enough room to store sufficient food while on the road for a week. Additionally, some mentioned not having the right equipment to prepare healthy meals in the cab. Drivers who mentioned having the right equipment also prepared some of their food in the truck.

"I would have to take healthier food with me. But like I said previously, it's the room in the truck where you know, you store all of this. You don't have so much room. Your fridge isn't like the one in your house it's only a small one." (Participant 6)

5.2.5. Theme 5: Long working hours and shift work

Not having enough time to prepare healthy food due to long working hours, shift work, and reduced rest periods was another major barrier reported. Drivers report that 45 minutes are not enough time to cook during the shift considering they also want to sleep or use the bathroom during that time. Most drivers stated that they are too tired after the shift and have no energy to cook a proper meal.

"They (drivers) sometimes do a 15-hour shift, and they might not want to cook something in the cab after that, so they do go for the easier option. Whatever is available in the services." (Participant 3)

Drivers stated a desire to have shorter shifts and proper rest periods between shifts to reduce stress and to provide more time to prepare healthy food.

"I do think that the current Working Time Directive for hours is unhealthy. People can be put to work sort of 15 hours which is very unhealthy." (Participant 7)

5.2.6. Theme 6: Flexible break policy needed

When drivers were asked about what kind of changes they need in their working environments, the most mentioned theme was to be more flexible when taking breaks. Due to mandatory breaks, drivers are restricted to when and where to stop, which affects their food choices as the right food would have to be available at the right time. Improved rest areas and healthier food option provision will only positively impact drivers' diets if they are able to reach them during their break times.

"People say there aren't truck stops. Yes, there are. But if you are not near one if you're due to stop to have your dinner, then you've got nothing. You've either got nothing or a service area with rubbish." (Participant 4)

5.2.7. Theme 7: Better facilities on the road required

Drivers expressed a desire for more and improved facilities on the road to fulfill their basic needs, such as using a bathroom and being able to find healthy affordable food. Some mentioned that there are roads with no facilities within an hour or two of driving. Better and more facilities were seen in other European countries. Drivers also felt that healthy food could be provided at their depot but needed to be available at all times.

"Travelling to Germany and France, there are far more service stations and rest areas and things like that. So I think the UK is very poor, for facilities for HGV drivers." (Participant 7)

"The government needs to do something, they need to step in and look at truck drivers out there how they live their lives you know because this country comes to a standstill now. They should recall these motorway services, put restaurants in, and offer decent meals to drivers instead of fast food outlets." (Participant 6)

5.2.8. Theme 8: Limited (safe) parking options

Drivers frequently reported issues finding parking places, affecting their food access. Additionally, many companies do not cover parking fees, limiting drivers' parking options, and catering options if they do not want to cover fees themselves.

"Some companies, I used to work for a company that actually delivered food and it was a refrigerators and temperature control transport. And they did not pay for any parking at all. So you have no option but to park in laybys, industrial states or wherever you could park really, because I would not pay for any parking." (Participant 5)

Driver safety was a reoccurring theme, a number of participants stated concerns over safety when parked at rest stops due to incidences of thefts or attempted thefts of either their fuel or loads. Because of safety concerns, this acted as a barrier for drivers leaving their vehicles. Drivers' felt that employers should pay for secure parking to enable them to feel safe and have access to food from service stations, rather than the need to park in a lay-by with no facilities.

"I mean, at the end of the day, a lot of companies want you to be a security guard, as well as a driver, but we get paid….the general allowance you get for staying overnight, is anywhere between 22 and 26 pounds……I'm not willing to get stabbed over diesel for 25 pounds." (Participant 5)

6. Motivation

6.1. Automatic motivation

6.1.1. Theme 1: Stress of the job

Drivers described that unhealthy options are chosen more often in moments of stress, largely due to traffic issues and pressurized time schedules, long working hours, and short rest periods.

"Especially if you're stuck in traffic. You know…all day, you've been queuing in traffic and it's stressful. And when you park overnight the last thing you want to do, because you are tired, is start cooking a meal. So you're gonna go to McDonald's and get fast food instead, you know?" (participant 6)

"…when you get home and the time you actually get to your actual sleeping time, there is not long, full time left." (participant 10).

6.2. Reflective motivation

6.2.1. Theme 1: Feelings of being undervalued

In general, drivers often feel genuinely undervalued and underserved in terms of health promotion efforts which can affect their psychological well-being and work performance.

"We are probably just drivers. It isn't seen as important that we get decent rest and decent food. But it's the actual companies that need to value the drivers will." (Participant 10)

"We're absolutely nothing anymore, unfortunately." (Participant 4)

"In some places you go people treat you contemptuously…" (Participant 2)

7. Discussion

A broad range of factors influence truck drivers' eating habits, including difficult working conditions such as shift work, long working hours, and a working environment with limited affordable healthy food options. This study aimed to map identified barriers and facilitators for healthy eating onto the COM-B model to identify the support needed for this underserved population. Most themes were mapped onto opportunities, followed by capabilities, and lastly motivation. This study provides vital information, within the UK context, to inform interventions and policy changes to improve drivers' poor working environments, and to enable drivers' to make healthier food choices especially while on the road.

Looking into drivers' *capabilities*, most were able to define what a healthy, balanced diet is and conveyed a desire to eat healthily. However, drivers reported that they have difficulties implementing healthy eating habits at work because unhealthy food options are widespread whilst healthy ones are expensive and limited, highlighting *physical opportunity* as a key barrier. Drivers reported mostly choosing sandwiches, convenience or fast food, and ready meals as a main course and chocolate bars, crisps, and biscuits as snacks.

Barriers to healthy eating were perceived on one side as individual barriers such as feeling stressed, too tired, and/or not having enough time to prepare healthy food at home or during their shift. These barriers are in part due to difficult working conditions including pressurized delivery schedules, long variable working hours, and shift work [1]. More time, better facilities, and more room to store and prepare food in the truck would help drivers to eat healthier whilst on the road. In Germany, Bschaden et al. found that the availability of facilities to store and prepare food influenced drivers' eating behaviors in terms of the foods they took to work [11]. Drivers who had a microwave or gas cooker consumed less purchased food at truck stops.

On the other side, drivers reported facing many environmental barriers such as being restricted in food choices on the road, highlighting again the main barriers for drivers' healthy eating lying within the *physical opportunity* domain. This is due to the limited availability of healthy options, limited parking options or opening times at service stations, non-flexible break times, and high food costs. Lincoln et al. conducted a pilot audit investigating HGV drivers' working environment in the US. Their perception of the food environment was very similar to the current study [17]. However, further research is needed in the form of environmental audits to fully understand drivers' working environment.

In the US, drivers mentioned the higher cost of healthy food as the main reason they choose unhealthy foods [24]. This points to the necessity of changing external factors, particularly the work environment, to enable drivers to make healthier choices. Regular access to affordable healthy food at depots and service stations/truck stops could facilitate better eating behavior in drivers. The costs on the road of healthier foods should be covered by the employer or government subsidy.

Several environmental adaptations were proposed by participants as potential facilitators for better eating habits. Being more flexible when and where drivers can take a break and shorter, more regular shift patterns were proposed for policy changes by the drivers. Employers may wish to consider offering more support in the workplace and rethink the significance of drivers' health and well-being by adjusting shifts and rest times. Those changes could give drivers more time to rest and reduce their stress levels, which in turn could have a positive impact on dietary behaviors. High levels of stress have been linked to poor driving performance and a higher crash risk, which also impacts other road users and should be of public concern [25]. Another concerning stressor for drivers is the fact that many of them feel unsafe at the places where they take their breaks due to incidences of thefts of either fuel or load. This can impact their food choice as they are not allowed or too scared to leave their vehicle and are therefore unable to purchase any food. This should be addressed by the government as a priority.

In the US, truck drivers reported having similar barriers to healthy eating compared with this sample [24,26]. Passey et al. held focus groups with a total of 30 drivers (mean BMI 32.6 kg/m^2) regarding views on barriers and facilitators of healthy eating and physical activity in drivers. Drivers in the US presented a lack of knowledge about appropriate energy intake and healthy weight management [24]. Although most drivers from our sample knew what a healthy diet is, they have difficulties to implement it in terms of food preparation or they struggle to deal with service station options. Therefore, they wished for improvements in their education surrounding dietary behaviors, especially regarding healthy eating and food preparation strategies, highlighting *psychological and physical capability* as a barrier to healthy eating. A module to further improve drivers' health literacy regarding diet, along with the content pertaining to making healthier dietary choices within the confines of their occupation, could be embedded within UK truck driver's mandatory training.

Only one theme could be mapped to the *social opportunity* domain which could be explained by the socially isolated nature of the occupation. Most drivers seem unaffected by their peers regarding their food choices at work as they mostly eat by themselves. This is different from the previous studies as social influence is a common key factor in terms of adopting a certain diet [27]. However, a few drivers mentioned being negatively affected by their coworkers. They do not want to sit on their own eating so they would join others in their break for social interaction. However, they tend to choose more unhealthy options when they are eating in a group, highlighting the impact of the isolating nature of the job on drivers' diet.

The combination of unhealthy food choices and a forced sedentary occupation can partly explain the driver's high risk for long-term conditions such as obesity, type 2 diabetes, and cardiovascular diseases. Most drivers were aware of the effect of their food choices and lack of exercise on their health [2,3,28], especially on their weight. A few drivers wished for more options to be active at work for energy compensations and proposed exercise opportunities at the depot or the service stations that has also been proposed in previous international studies [29,30].

Although truck drivers are of systemic importance in the UK, the presented study showed that they genuinely feel undervalued and underserved in terms of health promotion efforts that present a further environmental barrier to healthy eating being mapped to the *reflective motivation* domain. Pritchard et al. report that Australian drivers felt they were not respected by their managers and the public and feel underappreciated [31], which was confirmed by our sample. Hopkins et al. found that being treated disrespectfully, having poor working conditions, and dissatisfaction with roadside and parking facilities contribute to driver attrition [32] that should be considered in regard to the importance of developing new health regulations and policies for drivers.

Many of the suggested policy changes herein are outside of the drivers' control. Therefore, individual-level interventions should focus on potential changes within the drivers' control. Although drivers know what a healthy diet is, some choose not to have one, even when healthy options are accessible. The previous research has shown that knowledge and skills are not enough to change eating habits without forming an appropriate motivational basis [33]. Therefore, information might need to be coupled with motivational techniques to achieve behavior change in this population. Nutrition workshops including meal-prepping strategies, cooking techniques, and how to understand food labels should be offered in the workplace to help drivers put their knowledge into practice. This could be combined with drivers being encouraged to share knowledge about positive experiences to keep their motivations for healthier eating high over the longer term. However, in addition to motivational techniques, policy changes to improve the working environments of truck drivers will be necessary to improve their diet and health in the longer term. Within service stations and worksite canteens, healthier dietary options should be provided and clearly labeled, and potentially subsidized, increasing drivers' opportunities for healthier eating.

A key strength of this study is the fact that this has been the first qualitative study looking into barriers and facilitators of healthy eating behaviors in UK truck drivers. Qualitative interviews provide an in-depth insight of environmental elements and working conditions that impact truck drivers' diets. To our knowledge, this is also the first study in the UK identifying influencing factors on truck drivers' diet using the COM-B model. Data analysis was conducted by two researchers which improves data refinement and interpretation. This study is of high relevance as truck drivers are an understudied population especially regarding health promotion.

A study limitation is the small sample size which can narrow the spectrum of opinions and can lead to less accurate results. A convenience sample may have resulted in a biased sample of drivers who were keen to speak about their diet and issues of the industry but might not be fully representative of the whole truck driver population. Additionally, the results only reflect the driver's perspective and the feasibility of implementing some of the suggested environmental/policy changes that should be considered from an employers' [and wider policy makers] point of view. Future research should focus on testing the feasibility of proposed policy changes within the working environment to enable drivers to choose healthier food options whilst at work.

In conclusion, this is the first study looking into barriers and facilitators of healthy eating in UK truck drivers using the COM-B model. Truck drivers perceive a broad range of environmental factors affecting their eating behaviors, highlighting the *physical opportunity* domain as a main barrier. These outcomes help to better understand drivers' eating behavior to design interventions and to reduce the crash risk of those with poor health profiles. Challenging working conditions are affecting the health of truck drivers and impact driver retention and recruitment and must be improved accordingly, to address the UK truck driver shortfall. This study highlights that multi-component interventions targeting the individual, environment, and policy are ultimately needed to improve truck drivers' working conditions and health.

CRediT authorship contribution statement

Katharina B. Ruettger: Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Elizabeth Stamp:** Writing – review & editing, Methodology, Formal analysis. **James A. King:** Writing – review & editing, Supervision, Conceptualization. **Stacy A. Clemes:** Writing – review & editing, Supervision, Conceptualization.

Ethical considerations

Ethical approval was obtained from the Loughborough University Ethics Committee (Reference: 13462).

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used no AI and AI-assisted technologies in the writing process.

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Conflict of interest

None declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.shaw.2024.12.001.

References

[1] Caddick N, Varela-Mato V, Nimmo MA, Clemes S, Yates T, King JA. Understanding the health of lorry drivers in context: a critical discourse analysis. Health (United Kingdom) 2017;21:38–56. https://doi.org/10.1177/1363459316644492.
[2] Crizzle AM, Bigelow P, Adams D, Gooderham S, Myers AM, Thiffault P. Health and wellness of long-haul truck and bus drivers: a systematic literature review and directions for future research. J Transp Health 2017;7:90–109.
[3] Guest AJ, Chen YL, Pearson N, King JA, Paine NJ, Clemes SA. Cardiometabolic risk factors and mental health status among truck drivers: a systematic review. BMJ Open 2020;10:e038993. https://doi.org/10.1136/bmjopen-2020-038993.
[4] Office for national statistics trend in life expectancy at birth and at age 65 by socio-economic position based on the national statistics socio-economic classification, england and wales: 1982—1986 to 2007—2011; 2015.
[5] Ruettger K, Varela-Mato V, Chen Y, Edwardson C, Guest A, Gilson N, Gray L, Paine N, Sherry A, Sayyah M, Yates T, King JA, Clemes SA. Physical activity, sedentary time and cardiometabolic health in heavy goods vehicle drivers: a cross-sectional analysis. J Occup Environ Med 2022;64:E217–23. https://doi.org/10.1097/jom.0000000000002484.
[6] Office for national statistics fall in HGV drivers largest among middle-aged workers. Available online: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/fallinhgvdriverslargestamongmiddleagedworkers/2021-10-19. [Accessed 2 December 2023].
[7] GOV.UK UK government action to reduce the HGV driver shortage. Available online: https://www.gov.uk/government/topical-events/hgv-driver-shortage-uk-government-response/about#expanding-hgv-driver-testing-capacity-and-improving-licencing-processes. [Accessed 20 August 2024].
[8] Clemes SA, Varela-Mato V, Bodicoat DH, Brookes CL, Chen Y-L, Edwardson CL, Gray LJ, Guest AJ, Johnson V, Munir F, Paine N, Richardson G, Ruettger K, Sayyah M, Sherry A, Suazo Di Paola A, Thoughton J, Yates T, King JA. The effectiveness of the structured health intervention for Truckers (shift): a cluster randomised controlled trial (rct). BMC Med 2022;20:195. https://doi.org/10.1186/s12916-022-02372-7.
[9] FleetEx-global vehicle sales how HGV drivers can stay fit & healthy on the road. Available online: https://www.fleetex.co.uk/how-hgv-drivers-can-stay-fit-healthy-on-the-road/. [Accessed 31 October 2024].
[10] Driver hire training staying fit and healthy on the road as an HGV driver. Available online: https://www.driverhiretraining.co.uk/staying-fit-and-healthy-on-the-road-as-an-hgv-driver/. [Accessed 31 October 2024].
[11] Bschaden A, Rothe S, Schöner A, Pijahn N, Stroebele-Benschop N. Food choice patterns of long-haul truck drivers driving through Germany, a cross sectional study. BMC Nutr 2019;5. https://doi.org/10.1186/s40795-019-0326-3.
[12] Olson R, Anger WK, Elliot DL, Wipfli B, Gray M. A new health promotion model for lone workers: results of the safety & health involvement for Truckers

(SHIFT) pilot study. J Occup Environ Med 2009;51:1233–64. https://doi.org/10.1097/JOM.0b013e3181c1dc7a.
[13] Sendall MC, McCosker LK, Ahmed R, Crane P. Truckies' nutrition and physical activity: a cross-sectional survey in queensland, Australia. Int J Occup Environ Med 2019;10:145–50. https://doi.org/10.15171/ijoem.2019.1533.
[14] Ruettger K, Clemes SA, Chen YL, Edwardson CL, Guest A, Gilson ND, Gray LJ, Johnson V, Paine NJ, Sherry AP, Sayyah M, Troughton J, Varela-Mato V, Yates T, King JA. Drivers with and without obesity respond differently to a multicomponent health intervention in heavy goods vehicle drivers. Int J Environ Res Public Health 2022;19:15546. https://doi.org/10.3390/ijerph192315546.
[15] Houghtaling B, Balis L, Minaker L, Kheshaifaty K, Morgan R, Byker Shanks C. A systematic review of trucking food, physical activity, and tobacco environments and tractor-trailer drivers' related patterns and practices in the United States and Canada, 1993–2021. Prev Med Rep 2022;26:101760.
[16] Pritchard E, Van Vreden C, Iles R. Health & wellbeing of professional truck drivers-driving health qualitative study; 2020.
[17] Lincoln JE, Birdsey J, Sieber WK, Chen GX, Hitchcock EM, Nakata A, Robinson CF. A pilot study of healthy living options at 16 truck stops across the United States. Am J Health Promot 2018;32:546–53. https://doi.org/10.1177/0890117116670289.
[18] Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation Sci 2011;6:42. https://doi.org/10.1186/1748-5908-6-42.
[19] Atkins L, Francis J, Islam R, O'Connor D, Patey A, Ivers N, Foy R, Duncan EM, Colquhoun H, Grimshaw JM, Lawton R, Michie S. A guide to using the theoretical domains framework of behaviour change to investigate implementation problems. Implementation Sci 2017;12:77. https://doi.org/10.1186/s13012-017-0605-9.
[20] Gawlik A, Haberstock S, Beckert J, Zepp C. What moves truck drivers? A person-centered perspective on workplace physical activity promotion. Int J Occup Saf Ergon 2024;30:425–35.
[21] Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, Bartlam B, Burroughs H, Jinks C. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual Quant 2018;52:1893–907. https://doi.org/10.1007/s11135-017-0574-8.
[22] Braun V, Clarke V, Braun V, Clarke V. Using thematic analysis in psychology. 3: 2 (2006), 77-101. Qual Res Psychol 2006;3:77–101.
[23] Smith B, Caddick N. Qualitative methods in sport: a concise overview for guiding social scientific sport research. Asia Pac J Sport Soc Sci 2012;1:60–73. https://doi.org/10.1080/21640599.2012.701373.
[24] Passey DG, Robbins R, Hegmann KT, Ott U, Thiese M, Garg A, Kinney A, Murtaugh MA. Long haul truck drivers' views on the barriers and facilitators to healthy eating and physical activity: a qualitative study. Int J Workplace Health Manag 2014;7:121–35. https://doi.org/10.1108/IJWHM-08-2013-0031.
[25] Useche SA, Cendales B, Montoro L, Esteban C. Work stress and health problems of professional drivers: a hazardous formula for their safety outcomes. PeerJ 2018;2018:e6249. https://doi.org/10.7717/peerj.6249.
[26] Crespo NC, Manzo D, Perez V, Walsh-Buhi ER, Calzo JP. A qualitative study of multilevel barriers and facilitators associated with physical activity and diet among long-haul truck drivers. Saf Health Work 2024;15:263–70. https://doi.org/10.1016/j.shaw.2024.04.005.
[27] Higgs S, Thomas J. Social influences on eating. Curr Opin Behav Sci 2016;9:1–6.
[28] Apostolopoulos Y, Lemke MK, Hege A, Sönmez S, Sang H, Oberlin DJ, Wideman L. Work and chronic disease: comparison of cardiometabolic risk markers between truck drivers and the general US population. J Occup Environ Med 2016;58:1098–105. https://doi.org/10.1097/JOM.0000000000000867.
[29] Guest AJ, Paine NJ, Chen Y-L, Chalkley A, Munir F, Edwardson CL, Gray LJ, Johnson V, Ruettger K, Sayyah M, Sherry A, Troughton J, Varela-Mato V, Yates T, King JA, Clemes SA. The structured health intervention for Truckers (shift) cluster randomised controlled trial: a mixed methods process evaluation. Int J Behav Nutr Phys Activity 2022;19:79. https://doi.org/10.1186/s12966-022-01316-x.
[30] Boeijinga A, Hoeken H, Sanders J. Health promotion in the trucking setting: understanding Dutch truck drivers' road to healthy lifestyle changes. Work 2016;55:385–97. https://doi.org/10.3233/WOR-162409.
[31] Pritchard E, van Vreden C, Xia T, Newnam S, Collie A, Lubman DI, de Almeida Neto A, Iles R. Impact of work and coping factors on mental health: Australian truck drivers' perspective. BMC Public Health 2023;23:1090. https://doi.org/10.1186/s12889-023-15877-4.
[32] Hopkins D, Medappa K, Davidson A, Gregson N, James A. Views from the cab: the working lives of heavy goods vehicle drivers in the UK; 2024.
[33] Zwierczyk U, Sowada C, Duplaga M. Eating choices—the roles of motivation and health literacy: a cross-sectional study. Nutrients 2022;14. https://doi.org/10.3390/nu14194026.