

Perceived barriers and facilitators of exercise and healthy dietary choices: A study of employees and managers within a large transport organisation

Health Education Journal
2017, Vol. 76(6) 661–675
© The Author(s) 2017
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0017896917712296
journals.sagepub.com/home/hej



Emma Donaldson-Feilder^a, Rachel Lewis^b,
Louisa Pavey^c, Bethan Jones^a, Melanie Green^a
and Angela Webster^d

^aAffinity Health at Work, London, UK

^bKingston Business School, Kingston University, Kingston upon Thames, UK

^cDepartment of Psychology, Kingston University, Kingston upon Thames, UK

^dOccupational Health, Transport for London, London, UK

Abstract

Objective: The objective of this study was to examine employees' perceived barriers and facilitators of physical activity and healthy dietary choices, and managers' perceptions of how best to facilitate physical activity and healthy dietary choices among their team members.

Design: Single time-point survey with categorical and open-ended questions.

Setting: Participants were employees from a large public sector organisation ($N=121$), who were asked about the barriers to and facilitators of maintaining regular exercise and healthy dietary choices. Managers were additionally asked about methods for facilitating physical activity and healthy dietary choices among their team members.

Methods: Quantitative and qualitative methodology, with categorical and open-ended survey questions.

Results: Thematic analysis revealed similar themes for both physical activity and healthy dietary choices, with participants citing working patterns, commuting times, family commitments, job characteristics and lack of motivation as barriers to exercise and healthy dietary choices. Both employees and managers identified similar facilitators of exercise and healthy dietary choices such as improved information, facilities and working routines.

Conclusion: Results provide insight into the perceived barriers and facilitators to adopting a healthy lifestyle among a sample of employees with differing shift patterns and job roles. The results are discussed in relation to suggested methods for promoting physical activity and healthy dietary choices at work.

Keywords

Exercise, health, obesity, weight management, workplace

Corresponding author:

Louisa Pavey, Faculty of Arts and Social Sciences, Department of Psychology, School of Psychology, Sociology and Criminology, Kingston University, Kingston upon Thames, Surrey KT1 2EE, UK.

Email: L.Pavey@kingston.ac.uk

The increasing number of people who are considered overweight or obese is a serious concern for public health. In 2014, 39% of adults aged 18 years or over worldwide were classified as overweight (with a body mass index [BMI] greater than or equal to 25, where BMI equals weight in kilograms divided by height in metres squared), and 13% were classified as obese (with a BMI greater than or equal to 30) (World Health Organization, 2016). Being overweight or obese is not only a prominent risk factor for mortality but is also associated with numerous health problems, such as cardiovascular diseases, diabetes, musculoskeletal disorders and some cancers (World Health Organization, 2016). Obesity places a significant burden on public health services, and in the UK is estimated to cost the National Health Service over £5 billion each year in direct costs (McPherson et al., 2007). In addition, obesity confers significant economic cost from the loss of working days due to sickness absence and reduced productivity (Finkelstein et al., 2010).

The two most prominent and modifiable health behaviours which can reduce the risk of being overweight or obese are physical activity and healthy dietary choices (National Heart, Blood and Lung Institute [NHBLI], 1998). Insufficient physical activity has been shown to be a significant risk factor for mortality beyond the effect it may have on reducing obesity, with increased physical activity and healthy diet conferring numerous health benefits (Blair, 2009; Khaw et al., 2008). In addition, there is moderate evidence to suggest that healthy interventions can positively impact dietary behaviours (Maes et al., 2011). However, research suggests that people have difficulty in implementing behaviour change strategies such as increasing their physical activity and improving diet. While people may have strong intentions to adopt healthy behaviours, such as to increase physical activity and to adopt a healthy diet, situational and personal barriers may interfere with the ability to translate these intentions to behaviour (see Schwarzer, 2008).

A large-scale survey suggested that perceived barriers to physical activity, such as lack of time, family commitments, work commitments and feeling tired, all contributed to a reduction in time spent in physical activity and an increase in sedentary behaviours (Salmon et al., 2003). Research conducted with a large sample of participants undergoing counselling for weight loss found that the most cited barriers to weight loss and physical activity were poor time management, illness and lack of motivation (Venditti et al., 2014). Similarly, other research has identified the most commonly cited barriers to physical activity as lack of time, lack of motivation, poor health or injury, childcare, costs and feeling tired (Booth et al., 1997; Reichert et al., 2007). Research also indicates that when individuals have a family, this tends to take priority over physical activity, especially when parents have full-time job roles (Mailey et al., 2014). Other barriers to physical activity include lack of access to facilities such as gyms, both in terms of the cost of using facilities and the ease of access (Cerin et al., 2010; Gordon-Larsen et al., 2004). Seasonal changes can also affect levels of physical activity, with meta-analytic research suggesting that bad weather in particular makes physical activity difficult to complete, due to coldness and fewer daylight hours (Tucker and Gilliland, 2007).

Research shows a significant association between longer working hours, shift work, job stress and BMI (Schulte et al., 2004). Additionally, workplaces can be sedentary places for many employees, and often enable access to high-calorie foods which are low in nutritional value. Research has identified that several barriers hinder healthy eating, such as failure to follow advice given, lack of time and lack of willpower (Hamilton Escoto et al., 2012; Lappalainen et al., 1997). A large-scale survey found that barriers to healthy eating also include irregular hours of work and perceptions about healthy food (López-Azpiazu et al., 1999). This research highlights that both internal and external determinants of healthy eating are important to understand how weight can be managed. For example, food choices can be influenced by stress and mood; research has also identified that in stressful conditions, some individuals associate fatty food with improved mood, which could

lead to the formation of unhealthy dietary habits (Gibson, 2006). This means that workplace stress could adversely affect healthy eating choices and be a barrier to healthy dietary choices. Sensory perceptions of food are also important in determining food choices, with the perceived taste of food taking precedence over cost in food choice (Shepherd, 1990). Furthermore, unhealthy food is often associated with tastiness, and healthy food considered less appealing, making healthy choices less likely to occur (Raghunathan et al., 2006). Environmental and structural factors also contribute to making healthy dietary choices, such as availability, accessibility and cost of healthy foods.

Research into the facilitators of healthy dietary choices and physical activity has suggested that social support and availability of safe environments in which to exercise would encourage uptake of physical activity (Shuval et al., 2013). Additionally, a qualitative study exploring perceptions of young people in an inner city population identified facilitators as coaching, social support and addressing personal issues in individuals' environment (Moore et al., 2010). Other research has also suggested that available facilities are perceived facilitators of exercise (Ali et al., 2010; Alm et al., 2008). The majority of research into facilitators of healthy eating and physical activity focuses on the perspective of participants from specific populations such as those with health difficulties, for example, asthma (see Mancuso et al., 2006), and those from disadvantaged socioeconomic backgrounds (Moore et al., 2010; Shuval et al., 2013).

Given both the benefits to the employee and cost savings from improving employee health, the incentive for companies to develop health promotion programmes is high. In addition, the workplace is suggested to be an ideal environment to promote both healthy dietary behaviour and physical activity (Geaney et al., 2013; Rongen et al., 2013), due to the structured environment, the ability to reach a wide number of people and the large proportion of time people spend at work (Chu et al., 2000). However, although workplace health promotion interventions have been shown to be effective (e.g. Blake et al., 2013; Edries et al., 2013), the reported effect sizes are often small (Geaney et al., 2013; Malik et al., 2014; Rongen et al., 2013), and attrition rates are often high (Sherwood and Jeffrey, 2000). There are also a wide range of avenues for intervention, from individual-level initiatives to altering job characteristics and the job environment (Pratt et al., 2007).

To fully understand how workplace physical activity and healthy dietary choices interventions might be effective, and what interventions are perceived to be needed, a greater insight into the perspectives of employees is necessary. In particular, it is important to understand what individuals perceive to support them in undertaking the target behaviour and what prevents them from doing so. The research reported here examines the barriers and facilitators of effective healthy dietary choices and physical activity among a sample of workers from a large public sector organisation. In workplace settings, the success of interventions will depend not only on the individuals they are designed to impact but also on the context in which these individuals work, particularly their line managers. Therefore, the current study also goes beyond previous research and makes a unique contribution to the literature by addressing both employee and manager perspectives. Examining these perspectives is essential if successful health promotion policies are to be employed within the workplace. By using a qualitative approach, the research will help to ensure that a greater understanding of personal perspectives is achieved.

Aims

This study aimed to gain a more detailed understanding of the perceived barriers and facilitators of achieving greater physical activity and healthy dietary choices within a large public sector organisation. In the current study, the term 'healthy dietary choices' is used to refer to the maintenance of a healthy diet. In particular, the research aimed to

- Explore employees' and managers' perceptions of barriers to physical activity and healthy dietary choices,
- Explore employees' and managers' perceptions of potential facilitators of physical activity and healthy dietary choices,
- Explore managers' perceptions of how the organisation could facilitate employee physical activity and healthy dietary choices at work.

Method

Design and participants

A single time-point survey was used to access employee and manager views. The survey included both closed-ended questions and questions allowing open-ended responses. Participants ($N=121$; 94 men and 25 women with two missing values for gender) were recruited from a local government body that is responsible for the majority of the transport services across a major UK city, with several locations and over 10,000 staff. Of the 121 employees surveyed, 30 were managers. Due to the nature of the organisation, large proportions of employees work in shifts and have sedentary roles. Of the participants, 64% worked in shifts (12% early, 5% late and 47% mixed shifts) and 36% worked regular office hours. In all, 17% of participants reported working as train operators, with 41% working as station staff and 42% working in other areas of the company.

Materials

The questionnaire, which comprised questions developed specifically for this study, asked all participants to report their place of work within the organisation ('*Where do you work within [Organisation X]?*', with response options of: [a] Stations; [b] Train; [c] Other), and their working patterns ('*What shift pattern do you currently work under?*' with response options of: [a] Early; [b] Late; [c] Night; [d] Mixed Shifts; [e] Office Hours). Participants were also asked to report their gender, and were redirected to each section of the questionnaire based on their response to the question '*Thinking about your health and wellbeing, what would you like to change?*' with response options of: (1) physical activity (go to section 1), (2) weight (go to section 2) and (3) both (you can complete both sections).

In each section, participants were asked fixed response questions about their current physical activity and dietary choices. They were asked five questions on physical activity (section A) and five questions on healthy dietary choices (questions and response options are shown in Table 1).

In each section of the questionnaire, participants were also asked open-ended questions about the barriers and facilitators to behaviour change. For physical activity (section A), participants were asked, '*What makes physical activity difficult to do?*' and '*What could help you achieve increased physical activity?*' For healthy dietary choices (section B), participants were asked, '*What makes healthy weight management difficult to achieve?*' and '*What could help you achieve a healthier weight?*'

For managers, additional open-ended questions were asked in each section: '*What could Organisation X do to help you help your team lead a more physically active life?*' and '*What could Organisation X do to help you to help your team manage their weight more effectively?*'

Procedure

As part of a wider behaviour change project around workplace health, paper questionnaires were distributed through a variety of channels: at health fairs in five locations, at training courses,

Table 1. Perceptions of weight and physical activity levels. Percentages indicate the proportion of participants who chose each response option (*n*), out of the total number of participants who answered the question (see corresponding *total n*).

	N=121	
	<i>n</i>	%
What would you change about your health and wellbeing? (<i>total n</i> =91)		
Physical activity	19	21
Weight	27	30
Both	45	49
How much physical activity do you do in one week? (<i>total n</i> =101)		
Less than 2.5 hours per week	50	50
More than 2.5 hours per week	51	50
Is physical activity important to you? (<i>total n</i> =104)		
Yes	98	94
No	6	6
Are you satisfied with your current levels of physical activity? (<i>total n</i> =105)	34	32
Yes	71	68
No		
Do you want to change your current level of physical activity? (<i>total n</i> =115)		
Yes	79	75
No	26	25
If yes, are you confident you can achieve this change? (<i>total n</i> =77)		
Yes	56	73
No	21	27
Is having a healthy weight important to you? (<i>total n</i> =109)		
Yes	108	99
No	1	1
Are you satisfied with your current weight? (<i>total n</i> =106)		
Yes	34	32
No	72	68
Do you want to change your current weight? (<i>total n</i> =109)		
Yes	83	76
No	26	24
If yes, are you confident you can achieve this change? (<i>total n</i> =84)		
Yes	65	77
No	19	23

Because there was a filter question offering respondents the option of responding to either the physical activity section or the healthy dietary choices section, or both sections, the number of responses to different questions varies. Respondents also had the option to leave blank any questions that they did not want to answer, which led to some attrition in response rates.

through the organisation's safety bulletins and at one depot. Participants returned the questionnaire to the researchers immediately, or via the internal post. Participants completed the survey voluntarily and confidentially as part of a larger project regarding physical activity and healthy dietary choices in the organisation. No incentives to complete the questionnaire were given. Confidentiality

agreements formed part of the contract between the organisation and researchers. Participants targeted were those who were interested in the topic of health promotion, and it was not expected that a representative sample of employees would be obtained.

Analysis

The closed-ended responses were subjected to descriptive quantitative analysis, with frequencies of each response option recorded.

Thematic analysis (Braun and Clarke, 2006) was conducted to gain an in-depth perspective on both barriers and facilitators perceived by employees, as well as manager perspectives. All participant responses were used. First, researchers familiarised themselves with the data, noting initial observations about common responses. Then, initial coding was undertaken. Every response for each question was assigned a code which was a general description of the response. Once this was complete, the initial codings were considered and discussed to establish whether they were consistent. Subsequently, they were analysed for broader themes, sub-themes and links between themes. These were used to create themes for each question.

After the themes were created, each theme was refined by the researchers to ensure that the themes had sufficient data to justify the theme, ensure the themes were clear and that they did not overlap. If overlap or redundancy occurred, themes were integrated or were removed as they did not fit the data. To ensure objectivity, two researchers were involved in this process. The lead researcher (M.G.) on the analysis created the themes, and these were then discussed with a second researcher (L.P.). The second researcher then revisited the data independently to ensure the themes were an accurate reflection of the data.

Ethical considerations

This study was first conducted as a client consultancy rather than a research project. As a result, there was no ethics committee approval. That said, the researchers are Registered Occupational Psychologists and therefore followed the approved ethical procedures of both the British Psychological Society and the Health and Care Professions Council.

Results

Perceptions of weight and physical activity levels

Responses to the questions about perceptions of weight and physical activity levels are shown in Table 1.

Perceived barriers to physical activity

Of the 121 participants, 91 responded to the open-ended question, '*What makes physical activity difficult to do?*' Six themes were evident in their responses: (1) working patterns, (2) other commitments, (3) seasonal changes, (4) lack of motivation, (5) health issues and (6) facilities. Table 2 indicates sub-themes within each main theme, and gives quotes to exemplify the themes.

Perceived facilitators of physical activity

Of the 121 participants, 83 responded to the question: '*What could help you achieve physical activity?*' Six themes in their responses were identified: (1) easy access to gyms and other fitness

Table 2. Perceived barriers to physical activity. Percentages indicate the proportion of participants who gave responses related to each theme (see corresponding *n*), out of the total number of participants who answered the question (total *n* = 91).

Theme	Sub-themes	Example quotes
Work pattern (<i>n</i> = 18; 20%)	Working patterns not conducive to physical activity	'Long office hours. Meetings during lunch breaks' 'I wake up at 4:30/5am, I get home at 6pm earliest, by the time I have eaten etc. I am exhausted.'
	Working early or late shifts contributes to tiredness	'early/long shifts causes fatigue'
	Regularly changing shifts disruptive to sleep pattern	'Tiredness due to changing shift patterns' 'Shift changes, tiredness, no set pattern in daily life'
Other commitments (<i>n</i> = 54; 60%)	Finding time for physical activity in non-working life is difficult	'Finding the time to be active' '[there] are always other things I need to do'
	Long commute time minimises spare time and work life balance	'Time constraints due to 5 hour total commute each day' 'Work life balance as commute 2 hours each way'
Seasonal changes (<i>n</i> = 5; 6%)	Family commitments are a barrier to physical activity	'Very busy' 'Just moved house and got baby so too busy' 'No childcare after work'
	Dark evenings and bad weather	'Due to the darkness, cycling is limited to the weekends'
Personal lack of motivation (<i>n</i> = 11; 12%)	Lack of motivation is a barrier to exercise particularly in winter	'Seasonal – difficult to motivate self in winter'
		'lack of motivation' 'inertia' 'laziness'
Health Issues (<i>n</i> = 8; 9%)		'pregnancy is currently preventing me from doing as much exercise as I would like' 'recent heart op' 'back pain'
Facilities (<i>n</i> = 7; 8%)	Lack of facilities on site or near to work	'Lack of accessible gym' 'Facilities not available in workplace'
	Perception of gyms as expensive	'availability of reasonably priced gym memberships' 'would like to join gym but too expensive'

equipment, (2) support from others, (3) motivation, (4) adapting job roles, (5) resolution of health problems and (6) more free time. Table 3 indicates sub-themes within each main theme and example quotes.

Barriers to healthy dietary choices

Of the 121 participants, 88 responded to the question, 'What makes healthy dietary choices difficult to achieve?' Six themes were identified: (1) working patterns, (2) job characteristics, (3)

Table 3. Perceived facilitators of physical activity. Percentages indicate the proportion of participants who gave responses related to each theme (see corresponding *n*), out of the total number of participants who answered the question (total *n* = 83).

Theme	Sub-themes	Example quotes
Easy access to gyms and other fitness equipment (<i>n</i> = 34; 41%)	Easy access to exercise facilities	'Staff gyms' 'Free gym facilities at work' 'Reduced gym membership that includes all day access, not just off peak' 'In-house gym'
	Equipment at home and physical activity as a family	'Got a treadmill at home which will be useful in increasing my physical activity' 'Sport with kids'
Support from others (<i>n</i> = 2; 2%)		'3rd party support and encouragement' 'Have a chat with my personal trainer regarding our sessions'.
Personal motivation (<i>n</i> = 8; 10%)		'being more disciplined' 'motivation, really wanting to do it' 'train to be more motivated'
Adapting job roles to facilitate physical activity (<i>n</i> = 5; 6%)	Changes to job roles to allow more time and flexibility in working lives to leave extra time for exercise	'Flexi-working so I can do stuff before/after work or at lunchtime' 'incorporating it into the working day (currently using stairs instead of lift)'
	Regulating shift patterns to be flexible and accommodating of physical activity	'More flexible shift patterns – 4x8 hour shifts would be perfect' 'Better shift patterns' 'By getting into a regular routine'
More free time (<i>n</i> = 28; 34%)		'more time' 'More spare time – I travel 4 hours a day'
Resolution of health problems (<i>n</i> = 3; 4%)		'Time for heart to heal' 'Blood pressure to stay stable'

availability, (4) health issues, (5) personal motivation and perception of food and (6) family issues. Table 4 indicates sub-themes within each main theme and example quotes.

Facilitators of healthy dietary choices

Of the 121 participants, 87 responded to the question, 'What could help you achieve a healthier weight?' Six themes were identified as facilitators of healthy dietary choices: (1) change of Job characteristics, (2) reducing unhealthy eating habits, (3) guidance and support around healthy eating, (4) better facilities available for staff, (5) resolution of health Issues and (6) lifestyle changes. Table 5 indicates sub-themes within each main theme and example quotes.

Managers' perspectives

Managers were asked two additional questions, one regarding physical activity and one regarding healthy dietary choices. Regarding physical activity, 30 managers of the 121 participants responded

Table 4. Perceived barriers to healthy dietary choices. Percentages indicate the proportion of participants who gave responses related to each theme (see corresponding *n*), out of the total number of participants who answered the question (total *n* = 88).

Theme	Sub-themes	Example quotes
Working patterns (<i>n</i> = 29; 33%)		'tiredness from extremely early shifts' 'tiredness once back from work' Tiredness related 'loss of appetite' 'poor diet on night shifts' 'Shift work can make it hard to eat regularly at roughly set times' 'not having regular meals'
Job characteristics (<i>n</i> = 7; 8%)		'workload' 'rushing from meeting to meeting' 'stagnant job' 'convenient diet rather than healthy one due to commute time'
Availability (<i>n</i> = 31; 35%)		'Rubbish food available in canteens' 'Poor facilities for eating/preparing healthy meals' 'sweets and cakes in the office' 'Lots of convenience food and shops but little availability of healthy alternatives' 'When working late difficult to get healthy food on go'
Health issues (<i>n</i> = 3; 3%)	Personal health issues	'unable to put on weight – genetic – fast metabolism?'
	Individual differences mean support may not be relevant to everyone	'Weight solutions revolve around losing weight not gaining weight'
Personal motivation and perception of food (<i>n</i> = 18; 20%)	Eating habits and perceptions of food are problematic	'eating on emotions' 'food binging'
	General preference for unhealthy foods	'love cookies and eating' 'sugar addictions'
	Lack of willpower/motivation	'no willpower' (lack of) 'motivation'
	Preference for sweet foods	'bad food is also the tastiest' 'Tastiest food is the unhealthiest'.
	Other food is not viewed favourably	'healthy food is expensive and perishes'
Family issues (<i>n</i> = 5; 7%)		'going to fast food place with kids' 'childcare' 'family issues'

to the question, 'What could Organisation X do to help you help your team lead a more physically active life?' Regarding healthy dietary choices, 22 managers responded to the question, 'What could Organisation X do to help you to help your team manage their weight more effectively?' Responses from the two questions were analysed together due to the smaller number of responses.

Table 5. Perceived facilitators of healthy dietary choices. Percentages indicate the proportion of participants who gave responses related to each theme (see corresponding *n*), out of the total number of participants who answered the question (total *n* = 87).

Theme	Sub-themes	Example quotes
Change of job characteristics (<i>n</i> = 9; 10%)		'regular shifts' 'less workplace stress'
	Lifestyle changes (<i>n</i> = 26; 30%)	'getting enough rest' 'better planning to avoid last minute panic' 'Being more organised' 'Eat at sensible times not just before bed' 'More exercise' 'getting more rest'
Reducing unhealthy eating habits (<i>n</i> = 32; 37%)		'small portion size' 'Substituting snacks with fruit' 'Stopping eating bad foods' 'Monitoring what I eat'
Guidance support around healthy eating (<i>n</i> = 11; 13%)	Guidance and expert nutrition advice	potentially from a 'Dietician/nutritionist' 'Being able to talk and identify where I need to start and what I need to do' 'Awareness of more healthy eating patterns'
	Personalised advice that is attentive to needs of shift workers	'How to for shift workers' 'weight loss programmes that fit in with shift workers'
Better facilities for staff (<i>n</i> = 11; 13%)	Facilities that allow healthy eating to take place cheaply and at work	'subsidised healthy food' 'Canteen selling healthy food instead of pre-packed stuff. More fresh food'
	Exercise facilities at work	'In-house gym' 'weight loss programmes that fit in with shift workers'
Resolution of health issues (<i>n</i> = 2; 2%)		'Less pain in back to allow more exercise'

Four themes were identified across both questions: (1) provide support to employees, (2) promote and encourage take up of wellbeing initiatives, (3) improve provisions for employees and (4) adjust job characteristics. Table 6 indicates each main theme with example quotes.

Discussion

By engaging with individual perceptions, this study provides insight into the factors that workers identify as barriers to physical activity and healthy dietary choices, which could be used to identify areas for workplace intervention. Additionally, findings provide an understanding from the perspective of both employees and managers, of key factors perceived to aid physical activity and healthy dietary choices. This is important as it provides insight from both those to whom the intervention is targeted, and those who are responsible for employee wellbeing and productivity.

Many participants who answered the questions (across shift and office work) reported that their working patterns and commute times made physical activity and healthy dietary choices difficult. Lack of free time was widely identified by participants as a barrier to both physical activity

Table 6. Managers' perspectives. Percentages indicate the proportion of participants who gave responses related to each theme (see corresponding *n*), out of the total number of participants who answered the question (total *n* = 30).

Theme	Example quotes
Provide support to employees (<i>n</i> = 5; 17%)	'weight loss groups support network' 'incorporate social media ... physical activity app'
Promote and encourage take up of wellbeing initiatives (<i>n</i> = 5; 17%)	'Wellbeing interventions should be promoted to all not just those who are confident with exercising already' 'More health fairs rather than just once a year – maybe quarterly' 'health fairs more regularly' 'Provide seminars on health, nutrition and exercise'
Improve provisions for employees (<i>n</i> = 22; 73%)	'Healthy food and not unhealthy food' 'Discounted corporate deals with local gyms' 'Provide accommodation & equipment in workplace to encourage exercise which might in turn lead to better attendance'
Adjust job characteristics (<i>n</i> = 4; 13%)	'Improve shift patterns, with more regular shifts' 'Be supportive of attendance at gym during 9–5 provided 35hrs a week are achieved and work demands are satisfied' 'Allow staff to work flexi hours to fit activity into lives'. '45 min break. Currently 30mins which means grabbing food on the go'. 'Making the job varied and more interesting'

and healthy dietary choices, highlighting that organisational interventions are not sufficient if they do not address employees' limited time to devote to their own wellbeing. One way that companies may address this is by using web-based health promotion programmes as these have been found to be effective; however, these may be more effective in changing diet and nutrition rather than physical activity (Cook et al., 2007). Managers identified changes that could be made to working life and job characteristics, as well as highlighting that existing initiatives could be promoted and suggesting facilities and support could be given to employees. Managers suggested that allowing more flexibility in the working day to allow employees to exercise and have time for meals would aid the health and wellbeing of their colleagues. This suggests that managers perceived that personal intervention alone would not support the health of employees, and that there are adjustments to the working environment that would support employee wellbeing. There is always a risk that managers, while recognising the issues and potential solutions, are not supported or motivated to make changes to employees' working environment or work demands in order to enable solutions to be put in place; for this reason, practitioners within organisations (occupational health, wellbeing, health and safety) need to ensure that the culture and practices of the organisation support managers to employ appropriate solutions where needed. Supporting this, research found that when an individual intervention was combined with an environmental intervention at the workplace, after 2 years, there were significant differences in blood pressure and cholesterol. In addition, individual intervention participants put on weight and there was an increase in their BMI, whereas there were no changes in the combined individual and environmental intervention participants (Goetzal et al., 2010).

Participant responses in this research largely reflect facilitators and barriers identified in previous literature. Family issues, work issues and fatigue were all cited as barriers, and mean that less time and energy is available for physical activity (Salmon et al., 2003). Fatigue caused by working

hours, commute times and shift patterns was also perceived to be a barrier to physical activity (Das and Petruzzello, 2016). Workload and work issues were perceived to be barriers in healthy dietary choices, due to eating in reaction to stress, and lack of time to sit down and have set meal times (Pelletier and Laska, 2012).

Research has linked participation in shift work to increased BMI (see Schulte et al., 2004) and identified shift workers in particular as being at risk for a variety of health issues (Knutsson, 2003). It is therefore not surprising that many participants identified barriers presented by shift work. These included having no set meal times, and difficulty in planning when to eat, leading to a diet consisting of unhealthy foods. Many participants noted that they liked 'sugary' foods and 'cake and chocolate' – many also noted that cutting down on these foods would aid healthy dietary choices. This is potentially associated with willpower and motivation, supporting research which has identified failure to follow nutritional advice given, lack of time and lack of willpower as barriers to healthy dietary choices (Lappalainen et al., 1997).

Despite some useful findings, the limitations of the study must be acknowledged. This study was carried out in one organisation, in a specialised industry; consequently, the generalisability of the findings is limited. Additionally, the self-report questionnaire may result in social desirability bias. Furthermore, not all the participants answered the majority of questions; therefore, the attrition rate will have impacted on the interpretation of the results. It is possible that there may be differences between participants who responded and those who didn't and that these have not been fully considered. In addition, part of the sample was recruited through health fairs, which may mean that those who responded were more interested in health issues than other workers, so the sample may not be representative of the general workforce.

Further research could explore the issues further using interview or focus groups to gain more detailed data, as some responses to the survey questions were brief. It would also be beneficial to identify the areas in which intervention is most needed – for example, the results suggest that in this organisation, lack of access to gym facilities and healthy food were large barriers to healthy dietary choices, and that provision of subsidised on-site facilities and the time needed to access the gym would overcome these barriers to healthy dietary choices.

Study findings provide a number of valuable insights into what employees, and their managers, perceive to be barriers to and facilitators of physical exercise and healthy dietary choices. Employers and practitioners within organisations (occupational health, wellbeing, health and safety) can use the findings to help with the design of health promotion interventions, provision of canteen and other catering services and information around healthy eating, as noted at various points above. In addition, the findings suggest that taking a health promotion approach may not be enough, as some of the barriers identified implicate job design itself (shift patterns, long hours), while some of the facilitators identified also point to working life and job characteristics being important, which would suggest that employers should look at working practices, rather than rely solely on health promotion campaigns. The findings also suggests that there is awareness within the workforce of the importance of maintaining a healthy weight and undertaking physical activity together with some dissatisfaction with current weight and activity levels, which is encouraging in terms of indicating a degree of readiness to engage with relevant interventions, provided barriers are overcome and facilitators implemented.

Conclusion

This study offers insight into the perceived barriers to and facilitators of physical activity and healthy dietary choices, from the perspectives of employees of a local government body who are responsible for the majority of the transport services across a major UK city, many of whom work

irregular shift patterns. Additionally, manager perspectives, around what organisations can do to support their employees' health and wellbeing, were gained. It is clear that in populations with irregular working hours, interventions around health and wellbeing need to be relevant to this work and lifestyle. For example, access to facilities at work, both for exercise and preparing healthy food, are perceived to be facilitators of healthy dietary choices. In contrast, working patterns, commute times, fatigue, family commitments, health issues, seasonal issues, motivation and perceptions of healthy food were all considered barriers to wellbeing activities. Minimising these barriers and providing access to on-site gym and kitchen facilities that are subsidised are perceived by workers and their managers to be facilitators of healthy dietary choices and physical activity, which in turn has the potential to improve health and wellbeing in the workplace.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The project was jointly funded by Transport for London and Kingston University.

References

- Ali HI, Baynouna LM and Bernsen RM (2010) Barriers and facilitators of healthy dietary choices: Perspectives of Arab women at risk for type 2 diabetes. *Health and Social Care in the Community* 18: 219–228.
- Alm M, Soroudi N, Wylie-Rosett J, et al. (2008) Qualitative assessment of barriers and facilitators to achieving behavior goals among obese inner-city adolescents in a healthy dietary choices program. *Diabetes Education* 34: 277–284.
- Blair S (2009) Physical inactivity: The biggest public health problem of the 21st century. *British Journal of Sports Medicine* 43: 1–2.
- Blake H, Zhou D and Batt ME (2013) Five-year workplace wellness intervention in the NHS. *Perspectives in Public Health* 133: 262–271.
- Booth ML, Bauman A, Owen N, et al. (1997) Physical activity preferences, preferred sources of assistance, and perceived barriers to increased activity among physically inactive Australians. *Preventive Medicine* 26: 131–137.
- Braun V and Clarke V (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology* 3: 77–101.
- Cerin E, Leslie E, Sugiyama T, et al. (2010) Perceived barriers to leisure-time physical activity in adults: An ecological perspective. *Journal of Physical Activity and Health* 7: 451–459.
- Chu C, Breucker G, Harris N, et al. (2000) Health-promoting workplaces – International settings development. *Health Promotion International* 15: 155–167.
- Cook RF, Billings DW, Hersch R, et al. (2007) A field test of a web-based workplace health promotion program to improve dietary practices, reduce stress, and increase physical activity: Randomized controlled trial. *Journal of Medical Internet Research* 9: 1–9.
- Das BM and Petruzzello SJ (2016) Barriers to physical activity in a mass transit population: A qualitative study. *Journal of Physical Activity and Health* 13: 53–58.
- Edries N, Jelsma J and Maart S (2013) The impact of an employee wellness programme in clothing/textile manufacturing companies: A randomised controlled trial. *BMC Public Health* 13: 25.
- Finkelstein EA, DiBonaventura MD, Burgess SM, et al. (2010) The costs of obesity in the workplace. *Journal of Occupational and Environmental Medicine* 52: 971–976.
- Geaney F, Kelly C, Greiner BA, et al. (2013) The effectiveness of workplace dietary modification interventions: A systematic review. *Preventive Medicine* 57: 438–447.
- Gibson EL (2006) Making sense of food emotional influences on food choice: Sensory, physiological and psychological pathways. *Physiology & Behavior* 89: 53–61.
- Goetzl RZ, Roemer EC, Pei X, et al. (2010) Second year-results of an obesity prevention program at the Dow Chemical company. *Journal of Occupational and Environmental Medicine* 52: 3291–3302.

- Gordon-Larsen P, Griffiths P, Bentley ME, et al. (2004) Barriers to physical activity: Qualitative data on caregiver-daughter perceptions and practices. *American Journal of Preventive Medicine* 27: 218–223.
- Hamilton Escoto K, Nelson Laska M, Larson N, et al. (2012) Work hours and perceived time barriers to healthful eating among young adults. *American Journal of Health Behavior* 36(6): 786–796.
- Khaw KT, Wareham N, Bingham S, et al. (2008) Combined impact of health behaviors and mortality in men and women: The EPIC-Norfolk prospective population study. *PLOS Medicine* 5: 39–47.
- Knutsson A (2003) Health disorders of shift workers. *Occupational Medicine* 53: 103–108.
- Lappalainen R, Saba A, Holm L, et al. (1997) Difficulties in trying to eat healthier: Descriptive analysis of perceived barriers for healthy eating. *European Journal of Clinical Nutrition* 51: 641.
- López-Azpiazu I, Martínez-González MA, Kearney J, et al. (1999) Perceived barriers of, and benefits to, healthy eating reported by a Spanish national sample. *Public Health Nutrition* 2: 209–215.
- Maes L, Van Cauwenberghe E, Van Lippevelde W, et al. (2011) Effectiveness of workplace interventions in Europe promoting healthy eating: A systematic review. *European Journal of Public Health* 22: 677–682.
- Mailey EL, Huberty J, Dinkel D, et al. (2014) Physical activity barriers and facilitators among working mothers and fathers. *BMC Public Health* 14: 657.
- Malik SH, Blake H and Suggs LS (2014) A systematic review of workplace health promotion interventions for increasing physical activity. *British Journal of Health Psychology* 19: 149–180.
- Mancuso CA, Sayles W, Robbins L, et al. (2006) Barriers and facilitators to healthy physical activity in asthma patients. *Journal of Asthma* 43: 137–143.
- McPherson K, Marsh T and Brown M (2007) *Tackling obesities: Future choices: Modelling future trends in obesity and the impact on health* (2nd edition). Foresight Report. London: Government Office for Science. Available at: <https://www.gov.uk/government/publications/reducing-obesity-modelling-future-trends> (accessed 6 June 2017).
- Moore JB, Jilcott SB, Shores KA, et al. (2010) A qualitative examination of perceived barriers and facilitators of physical activity for urban and rural youth. *Health Education Research* 25: 355–367.
- National Heart, Blood and Lung Institute (NHLBI) (1998) Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: The evidence report. Available at: http://www.nhlbi.nih.gov/files/docs/guidelines/ob_gdlns.pdf (accessed 9 March 2015).
- Pelletier JE and Laska MN (2012) Balancing healthy meals and busy lives: Associations between work, school, and family responsibilities and perceived time constraints among young adults. *Journal of Nutrition Education and Behavior* 44: 481–489.
- Pratt CA, Lemon SC, Fernandez ID, et al. (2007) Design characteristics of worksite environmental interventions for obesity prevention. *Obesity* 15: 2171–2180.
- Raghunathan R, Naylor RW and Hoyer WD (2006) The unhealthy = Tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing* 70: 170–184.
- Reichert F, Barros A, Domingues M, et al. (2007) The role of perceived personal barriers to engagement in leisure-time physical activity. *American Journal of Public Health* 97(3): 515–519.
- Rongen A, Robroek SJW, van Lenthe FJ, et al. (2013) Workplace health promotion: A meta-analysis of effectiveness. *American Journal of Preventive Medicine* 44: 406–415.
- Salmon J, Owen N, Crawford D, et al. (2003) Physical activity and sedentary behavior: A population-based study of barriers, enjoyment, and preference. *Health Psychology* 22: 178–188.
- Schulte PA, Wagner GR, Ostry A, et al. (2004) Work, obesity, and occupational safety and health. *American Journal of Public Health* 97: 428–436.
- Schwarzer R (2008) Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology* 57: 1–29.
- Shepherd R (1990) Nutritional and sensory beliefs in food choice. *British Food Journal* 92: 3–8.
- Sherwood NE and Jeffrey RW (2000) The behavioral determinants of exercise: Implications for physical activity interventions. *Annual Review of Nutrition* 20: 21–44.
- Shuval K, Hébert ET, Siddiqi Z, et al. (2013) Impediments and facilitators to physical activity and perceptions of sedentary behavior among urban community residents: The Fair Park study. *Preventing Chronic Disease* 10: 125.

- Tucker P and Gilliland J (2007) The effect of season and weather on physical activity: A systematic review. *Public Health* 121: 909–922.
- Venditti EM, Wylie-Rosett J, Delahanty LM, et al. (2014) Short and long-term lifestyle coaching approaches used to address diverse participant barriers to weight loss and physical activity. *International Journal of Behavioral Nutrition and Physical Activity* 11: 16.
- World Health Organization (2016) Obesity and overweight factsheet (updated June 2016). Available at: <http://www.who.int/mediacentre/factsheets/fs311/en/> (accessed 5 May 2017).