*"It's not an obvious issue is it?"* **Office-based employees' perceptions of prolonged sitting at work: a qualitative study**

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**Abstract**

**Objective,** Current UK workplace health promotion guidance recommends that employers minimise sedentary behaviours but understanding the issues relating to prolonged workplace sitting has received little empirical attention. This study aimed to explore employees' perceptions of sitting time. **Methods,** Participants at a small to medium sized UK company were invited to join one of five focus groups. A framework analysis approach was used. **Results**, Self-reported mean estimate of occupational sitting time was 6.4 hours/day with a mean estimate of leisure time sitting 6.5 hours/non-work days. The study highlighted employees' lack of appreciation of the health risks associated with sedentary behaviour. **Conclusions,** This study has highlighted that in addition to personal determinants, the workplace environment and organisational culture have a key role in supporting employees' potential adoption of healthier sitting behaviour in the workplace.


Keywords: *Sitting, workplace, sedentary, health, qualitative*

**Introduction**

Sedentary behaviours are those that result in low levels of energy expenditure [1] and typically include reclining and sitting during leisure time, at work and while commuting [2]. Sedentary behaviours have been facilitated through design and technological developments in schools and workplaces. Wilmot et al. [3] recently conducted a systematic review and meta-analysis of evidence from 18 studies of the impact of sedentary behaviour in adults on four clinical outcomes: diabetes, cardiovascular disease, cardiovascular mortality and all-cause mortality. They concluded that increased sedentary time were associated with a greater risk of all four clinical outcomes and that the association was most consistent for diabetes. Furthermore, the associations were 'largely independent of physical activity'. Importantly, Wilmot and Colleagues [3] excluded studies that reported "inactivity" as sedentary time, due to the distinction that sedentary behaviour or prolonged sitting is not the same as too little exercise. Prolonged sitting has become a focus for public health research and policy, with new guidance for employers on reducing sedentary behaviour in the workplace [4]. However, the translation of such guidance to effect sustained behaviour change remains a challenge for researchers, employers and policy makers.

Despite increased attention on prolonged sitting time that quantifies the amount and setting where this behaviour occurs, empirical research that explores the reasons for this behaviour is sparse [5]. To our knowledge, only two studies have explored the reasons for prolonged sitting time in the workplace [6-7]. Examination of workplace sedentary behaviour is needed, particularly in industrialised countries such as the UK, where employees may be sedentary for approximately 75% of their working day [8]. The associated health concerns of sedentary behaviours are multifaceted and thus, go beyond the more commonly associated physiological health concerns. For example, in a sample of Occupational Health and Safety

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practitioners, Gilson et al. [6] reported that prolonged sitting time in the workplace was linked to psychosocial health concerns including depression, social-isolation, boredom and disengagement from work. Moreover, De Cocker et al. [7] explored employee and executive perceptions of potential intervention strategies to reduce prolonged sitting in the workplace. They reported that employees were aware that they sat too long in the workplace and that this was associated with musculoskeletal health problems. They also identified a number of barriers and strategies to reduce prolonged sitting that require consideration for future workplace interventions. De Cocker et al. [7] noted that empirical research that informs intervention design that are country and setting, will increase the likelihood of success.

The lack of empirical research and effective workplace interventions suggests that greater evidence to inform future practice is warranted. Previous workplace interventions to decrease sitting time include but are not limited to height-adjustable workstations [9-12], educational interventions to increase manager and staff knowledge of prolonged sitting [13] and discouraging sedentary practices [14]. For example, Chau et al. [10] explored perceptions of using sit-stand desk in a non-government health agency in Australia. Favourable attitudes and use were reported for the 4-week intervention period; however, longer-term data were not presented. There are many benefits in having a healthy, non-sedentary workplace. For example, work productivity is greater in healthy, physically active employees [15-16]. The workplace represents an ideal setting to house prolonged sitting interventions and to support healthy behaviour change, with estimates that employees spend more than half their day seated [17-18]. Understanding how to effectively intervene is imperative to support employees change their sitting behaviour at work. To our knowledge, the current study is the first to explore reasons for prolonged sitting in a UK workplace. The current study aimed to

explore perceptions of health risks associated with prolonged sitting and current and potential strategies to reduce sitting time at work in a UK sample of office-based employees.

## Methods

### Participants

A purposive, convenience sample of 21 employees (11 male, 10 female) aged 18-65 years (46 ± 7 years) were invited to take part in the study via an email invitation sent by one of the authors. Participants were sampled from a small to medium sized UK company, whose workforce was primarily engaged in office-based working with some additional laboratory-based activity. Participants had worked at the company for 11 ± 7 years and in their current role for 6 ± 5 years.

### Design

A focus group methodology was employed to explore employees' perceptions of sitting time in the workplace. To understand individuals' shared experiences of sitting at work a phenomenological approach was adopted which was directed by an a-priori research framework, a common technique in applied health services research that allowed pre-determined questions relating to sitting at work to be asked, whilst providing an opportunity for participants to raise additional issues and experiences at their will [19].

### Procedures

In sampling participants, study information informed that Board level approval had been obtained and their participation in the study would take place in work time. Interested respondents provided written consent prior to study participation.

Ethical approval was obtained from Sheffield Hallam University's Faculty of Health and Wellbeing Ethics Committee, UK. Five focus groups were convened at the workplace with 3-5 employees per group. Four groups consisted of non-managerial employees and one group was exclusively managers. Each focus group was facilitated by a researcher and two observer-researchers lasting 50-90 minutes. Prior to the focus groups, participants were asked to complete the Workforce Sitting Questionnaire [20] and the short-form International Physical Activity Questionnaire (IPAQ) [21]. The former asked for an estimation of occupational, transport and leisure-time sitting. The questionnaire was used to prompt participants' thoughts about their own sedentary behaviour and in particular time spent sitting. A topic guide was used to direct the group discussions with the following key questions: 1) "What is your perceived association between sitting time and health?" and 2) "What strategies could be used to break up or reduce prolonged sitting at work?" Each focus group discussion was recorded and transcribed verbatim by an independent source. Supporting field notes were taken by the observer-researchers to support interpretation of the data.

**Data Analysis**

A framework analysis approach was used [22]. The stages of familiarisation, identifying a thematic framework, indexing, charting, mapping and interpretation of findings were followed. To ensure trustworthiness of the analysis, the four researchers analysed the focus groups independently before merging their analysis. It has been suggested that independent analysis can reduce inter-rater effects on the reliability qualitative analysis [23-24]. In working towards a final agreement, themes that were identified by 1-3 researchers were deliberated to establish whether those themes were evident in the data. Themes were indexed and charted with accompanying quotes. Consensus and agreement was reached on key sub-

themes. It was concluded that data saturation had been reached on the basis of no new emergent themes after the fifth discussion group. Participant validation was conducted by emailing a summary of findings from each group to participants.

## RESULTS

### Sitting time

The self-reported mean estimate of sitting time at work was 6.4 hours. This is consistent with statements from the participants indicating that most of their work time involved sitting. Sitting was also a prevalent behaviour during leisure time with a mean estimate of 6.5 hours reported on non-work days. All but three participants (14%) reported that they were achieving the Government's minimum guidelines of physical activity for health [25].

### Self-awareness of own sitting time and impact on health

There was a clear consensus that employees felt they sat for too long at work. The majority of participants had experienced negative symptoms associated with sitting at work; the most common being neck and back pain, dry eyes, poor posture, weight gain, bad mood, a sense of sluggishness, fatigue and reduced concentration. Consequently, these symptoms were reported to compound feelings of mental stress, which was deemed responsible for reducing work productivity. Very few participants suggested a link between prolonged sitting in the workplace and increased risk of chronic health problems such as diabetes and cardiovascular disease. Participants mentioned that they rarely considered the health risks of prolonged sitting because they had the constant distraction of being busy:

*"It's not an obvious health issue is it? Sitting still isn't obvious and it probably doesn't register in most peoples' minds that it can be negative because your mind is busy you don't recognise that your body isn't."*

Although it was generally believed that taking regular short breaks from sitting would be more beneficial than taking one long break, participants did not understand the health implications of prolonged sitting.

**Barriers to sitting less and moving more**

*Occupational role*

It was evident that for most, sitting was integral to their occupational role and participants shared the common view that sitting at work was an inevitable occupational hazard:

*"The nature of our work is very sedentary unfortunately."*

*"Walking about is incidental. It will get me to the task, but the task, every task I do at work - I think is sitting."*

*Organisational culture*

One of the most commonly reported barriers to reducing sitting time was the practice and issue of "chargeable time" which was explained by the following participant:

*"Chargeable time, we have a chargeable time culture. You know, so many workplaces do, you need to account for what you've been working on and it needs to contribute to the organisation as a whole, fill out your time sheets at the end of the week and I think that*

*applies direct and also subliminal pressure to... when you are doing things that are social like talking to someone … you're thinking this isn't chargeable"*

It was evident that current practice for taking breaks was based on a combination of departmental culture; what had become historically acceptable plus what was overheard and reported from elsewhere within the organisation. The corporate culture within the organisation was a key mediator of participants' behaviour:

*"So for me there are some hidden pressures, it's not perceived to be good to be seen walking around unless you've got piece of A4 paper in your hand."*

*"Sit at your desk for a lunch break and eat while working, it's become, it's something I would never have done in the past and in recent years it's just become habit."*

***Personal motivation***

Most participants were interested in the idea of reducing their sitting behaviour. The only partially disconfirming cases were regular exercisers or those with a young family. A sub-group of habitual exercisers welcomed the opportunity to sit at work and perceived sitting as positive recovery time. Parents of young children commented that work offered an opportunity to sit rather than constantly running around after children at home. Whilst the regularity of breaks from sitting was partly at the discretion of the individual, this choice was framed within the context of organisational and cultural pressures that more readily influenced their behaviour.

Participants commented that any strategy to reduce sedentary behaviour at work must

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compete with established routines and habits. Finding the motivation to initiate a new behaviour was acknowledged as a significant challenge especially alongside competing priorities. The consequence of not knowing how to modify current behaviours was explained by one participant:

*"I couldn't see what else I could do to offset it (prolonged sitting) so I decided to put it to the back of mind."*

This highlighted the need for education and flexible support that could be tailored to each participant's needs:

*"... perhaps a bit of self-awareness as well as the availability of options."*

Participants' preference was to be in control of planned breaks from sitting. This would allow flexibility to break from sitting around their work schedules, and that this required a level of trust between management and employees:

*"Allow people to experiment to find their optimal balance of work, activity and productivity"*

### Physical environment

Participants' reported that the lack of meeting rooms, venues that necessitated a move away from one's desk, further reduced the impetus reduce sitting. Participants suggested sit-stand desks and desks for stand-up meetings as alternatives to sitting. Restrictions on accessing certain locations at the workplace site due to operational, or health and safety needs raised concern amongst participants:

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*"... the access to the Formby foot has been stopped. To me on a wonderful day like today that's a lovely place to go and have a picnic, you know, for lunch and so a 20 minute walk there, 20 minute lunch and walk back. If that was available I would do that more often than sit here, there are facilities that could be made a bit more available."*

Discussions did reveal that there were recreational facilities on-site for employee use; however, these received little positive attention, possibly due to current condition of the facilities. New gym equipment was suggested as a way to attract more users. Importantly, there was a strategic need for managerial support to use on-site facilities, which may lead to increased usage of the recreational facilities.

**Strategies to reduce occupational sitting**

*Organisational factors*

Participants reflected that responsibility for their own health rested with the employees themselves not their employer. However, participants were keen for their employer to encourage and support reduced sitting time at work. Preferred strategies included evidence based information on the risks of sedentary behaviour and "best practice" strategies to increase physical activity:

*"I think that kind of proactive thing to raise awareness could help and maybe make people think a bit more about doing something at lunch time or getting up every hour to have a little walk about and as long as that was supported by senior management."*

Participants' suggested that the workplace could offer extrinsic motivational support using incentives or a corporate wellness scheme with tailored health checks to help employees reduce their sedentary behaviour at work and more generally to optimise their health and well-being:

*"... some kind of organised session may just incentivise people a little bit more than people doing it off their own back."*

Participants agreed that incorporating a "break from sitting" code or allowance into the working day might provide a workable solution to the aforementioned barrier of "chargeable time":

*"What if they were to turn round and say, for those people that want to do in your hours we will give you a job code in which you can only use it to exercise. So we're not asking you to do another hour on the day but we value your health and we want to invest in your health."*

### *Corporate culture*

Corporate endorsement was seen as the key factor in helping employees change their sedentary behaviours. Communication at all levels within the organisation was acknowledged as a lever for change. Use of existing communication channels and hierarchical structures to cascade information were viewed as positive ways to influence behaviour. Filtering information to staff via unit heads or departmental health and wellbeing champions was suggested as a way of communicating effectively with the whole workforce:

*"I think possibly the idea of having somebody within that unit or within the team who's like a little health and wellbeing champion as it were who's the key person in terms of organizing buddy's or and they also give news. You could have one in each unit perhaps or even in each team that would probably work."*

*"The other way is that most units have regular unit or team meetings so make it some kind of mandatory communication from the health and wellbeing group to the unit heads so the unit heads have physically got to engage with their staff rather than an email or a poster."*

**Discussion**

To the authors' knowledge, the current study is the first UK examination of employees' perceptions of the risks associated with sitting at work and the strategies employed to reduce sitting time. Current UK workplace health promotion guidance [4] recommends that employers should encourage their employees to 'move around more' during their working day. However, this challenge can only be met by understanding the issues that shape and define an individual's behaviour at work. The current study has highlighted that personal determinants, the workplace environment and organisational culture influence workplace sitting time. This study also demonstrates that employees' do not appreciate the health risks of sedentary behaviour. The findings are in line with De Cocker et al [7] as the majority of participants were aware that prolonged sitting time is associated with musculoskeletal health concerns. Whilst only a minority, some participants did report that prolonged sitting time was viewed as positive in work, particularly for regular exercisers and those who have young. Thus, for some, time spent sitting in work was valued.

Participants in our study sat at work for a mean time of 6.4 hours/day, which is comparable with Gilson and Colleagues [6] who reported that Australian Government personnel sat between 4-8.5 hours/day. In our study, all participants perceived that prolonged sitting time was associated with poorer health and well-being at work. Interestingly, the health risks of sitting were mainly attributed to musculoskeletal conditions and psychosocial factors such as reduced concentration, rather than major chronic disease such as cancer, type II diabetes and cardiovascular disease.

Opportunity exists for employers to provide employees with up to date, evidence-based information to support reduced sedentary behaviour at work. In particular, information relating to dose-response evidence, a physiological rationale for change and practical guidelines as to how much sitting is "enough" were requested. Tremblay and Colleagues [26] have reported beneficial metabolic associations arising from breaks in sitting that are light in intensity >1.5 to <3.0 METS, which equates to standing up for a few minutes or a brief walk. Recent research [27] offers a strong rationale for this approach; interruptions to sitting time with 2-minute bouts of light or moderate intensity walking every 20 minutes reduced postprandial glucose and insulin levels in overweight/obese individuals. Further recommendations [28] suggest that discretionary sitting should be limited to a maximum of two hours per day, and employees should stand up and move after 30 minutes of uninterrupted sitting.

During the focus groups, participants were very proactive and without the need to prompt, offered suggestions for increasing awareness of sitting time in the workplace. For example, lunchtime seminars and workshops, provision of e-learning material on the staff intranet site and best practice reference material to enhance knowledge and inform behavioural choices.

These preferences highlight the need for employers to offer a flexible menu of educational support, ideally tailored to individual needs. Personal motivation and choice were recognised as key drivers for change, yet the workplace environment and organisational culture clearly shaped employees' choices. This is concordant with the findings of Gilson [6] who reported that the organisational culture was perceived to be one where sitting at your desk was synonymous with being productive. The pre-dominant culture of "one shouldn't be seen away from your desk" and the business process of "chargeable time" meant that breaks were not taken.

Within the context of a business-driven workplace, the feasibility of reducing employee sitting time yet maintaining work productivity is a key challenge. In terms of feasibility, participants reported that light-intensity activities such as walking to meeting rooms, taking standing breaks from sitting, stand-up meetings and walking at lunchtimes were more realistic and preferable interventions than engaging in moderate to vigorous physical activity at the workplace, which required more time and effort.

Commentators on workplace health and sedentary behaviour [1, 12-13, 29-31] advocate that the workplace can lead to sustainable change, as organisational practice, policy, established communication channels, in-built social support from colleagues and management systems can all encourage healthy behaviour change. Our study identified that endorsement from the organisation was the key mediator in workplace behaviour change.

**Conclusions**

The current study provides the first UK examination of employee perceptions of prolonged sitting in the workplace. Our findings highlighted that personal determinants, the workplace

environment and organisational culture have a key role in reducing employees' sitting behaviour in the workplace. This study highlights employees' lack of appreciation of the health risks associated with sedentary behaviour, and offers important insights from UK employees that should be used to guide future interventions that aim to reduce sedentary behaviour in the workplace. It also emerged that corporate and organisational culture is a powerful moderator of employees' willingness to adopt healthier behaviours at work, which should be considered in the design and implementation of workplace interventions.

**Abbreviations**

IPAQ: International Physical Activity Questionnaire

**Keypoints**

- The current study represents the first UK examination of employee perceptions of prolonged sitting in the workplace.
- Personal determinants, the workplace environment and organisational culture are key to reducing employees' sitting behaviour in the workplace.
- Employees' lack understanding of the health risks associated with sedentary behaviour.
- The current study findings should be used to guide future interventions that aim to reduce sedentary behaviour in the workplace.
- Future workplace interventions should consider the corporate and organisational culture given its impact on employee willingness to adopt healthier behaviours at work.

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