Understanding occupational sitting: prevalence, correlates and moderating effects in Australian employees.

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ABSTRACT

Objective: To (1) compare occupational sitting between different socio-demographic, health-related, work-related and psychosocial categories, (2) identity socio-demographic, health-related, work-related and psychosocial correlates of occupational sitting, (3) examine the moderating effect of work-related factors in the relation between correlates and occupational sitting.

Methods: Randomly-selected Australian adults completed a web-based survey assessing socio-demographic (country of birth, gender, age, education, income), health-related (general health, weight, physical activity), work-related (employment status, occupational task, occupational classification) and sedentary-specific psychosocial (social norm, social support, self-efficacy, control, advantages, disadvantage, intention) factors, and occupational sitting-time. T-tests, ANOVA's and multiple linear regression analyses were conducted (in 2013) on a sample of employees (n=993).

Results: Respondents sat on average for 3.75 (SD=2.45) hours/day during work. Investigated correlates explained 41% of the variance in occupational sitting. More occupational sitting was associated with being male, being younger, higher education and income, part-time and full-time employment, sedentary job tasks, white-collar/professional occupations, higher BMI, and perceiving more advantages of sitting less at work. Employment status and occupational classification moderated the association between control to sit less and occupational sitting. A lack of control to sit less was associated with higher occupational sitting in part-time and full-time workers, but not in casual workers; and in white-collar and professional workers, but not in blue-collar workers.

Conclusions: Most important contributors to occupational sitting were work-related and socio-demographic correlates. More research is needed to confirm present results.

Keywords: sedentary behaviour, cross-sectional study, workplace, online survey.

INTRODUCTION

Public health research is increasingly focussing on sedentary behaviour (SB) (Marshall and Ramirez, 2011; Pate et al., 2008; SBRN, 2012) as a risk factor for poor physical (Thorp et al., 2011; Vandelanotte et al., 2009; Gardiner et al., 2011; Healy et al., 2011; Thorp et al., 2010; Sisson et al., 2009; Proper et al., 2011; Stamatakis et al., 2011; George et al., 2010; Moore et al., 2010; Katzmarzyk et al., 2009; Patel et al., 2010; Dunstan et al., 2011) and mental (Thorp et al., 2011; Teychenne et al., 2010; van Uffelen et al., 2013) health in adults. A high proportion of the population is at risk, as the levels of SB are generally high (Healy et al., 2008; Matthews et al., 2008; Spittaels et al., 2012). Therefore, interventions to reduce SB and consequently improve public health are needed. An established research framework, the behavioural epidemiology framework (Marshall and Ramirez, 2011; Owen et al., 2010), was identified to study this relatively new behavioural risk factor in five sequential stages. Within the first two phases (identifying relationships of SB with health; measuring SB), sufficient evidence is available (Thorp et al., 2011; Vandelanotte et al., 2009; Gardiner et al., 2011; Healy et al., 2011; Thorp et al., 2010; Sisson et al., 2009; Proper et al., 2011; Stamatakis et al., 2011; George et al., 2010; Moore et al., 2010; Katzmarzyk et al., 2009; Patel et al., 2010; Dunstan et al., 2011; Teychenne et al., 2010; van Uffelen et al., 2013; Castillo-Rentamal et al., 2011; Atkin et al., 2012). However, more research is needed to address the third phase (identifying determinants and correlates of SB), which will in turn inform the fourth (developing and testing interventions to influence SB) and fifth phase (informing public health guidelines and policy) (Marshall and Ramirez, 2011; Owen et al., 2010) of the behavioural epidemiology framework.

When identifying the correlates of SB, it is important to examine potential correlates that are specific to the domain in which the behaviour occurs (Owen et al., 2011; Giles-Corti et al., 2005). While a great variety of SBs have been studied (Burton et al., 2012; Rhodes et al., 2012), there is limited research investigating correlates of domain-specific SBs. One domain in which SB is particularly prevalent is the work setting (Thorp et al., 2012; Parry and Straker, 2013; Tudor-Locke et al., 2011), making the workplace a key target setting for interventions (Thorp et al., 2012; van Uffelen et al., 2012). However,

there is little research identifying differences in occupational sitting between different categories and the factors associated with occupational sitting. When investigating correlates of SB, ecological models of health behaviours can be used as a theoretical basis (Owen et al., 2011). At present, mostly socio-demographic and health-related factors have been investigated (Mummery et al., 2005), but research focusing on psychosocial factors of occupational sitting is lacking (Rhodes et al., 2012). More information on these modifiable correlates is however needed to inform the development of interventions to reduce sitting at work (Marshall and Ramirez, 2011; Owen et al., 2011). Consequently, the aims of this study were to (1) compare occupational sitting between different socio-demographic, health-related, work-related and psychosocial categories, (2) identify correlates of occupational sitting including psychosocial factors not addressed in previous studies, and (3) examine the moderating effect of work-related factors in the association between correlates and occupational sitting The last aim was included as it was hypothesized that occupational sitting and its correlates can differ between different employment statuses, tasks and classifications.

METHODS

Study design and procedures

This study was part of the Australian Health and Social Science (AHSS) study conducted by the Population Research Laboratory at Central Queensland University (Hanley and Mummery, 2009). A web-based survey was developed in order to investigate health behaviours and their correlates in a randomly selected group (panel) of Australian adults, recruited annually from 2009 via computer assisted telephone interviewing. Potential respondents from randomly selected households across each Australian state and territory were asked to participate. At the time of conducting this study (August-September 2012) there were 3,932 AHSS panel members. Each respondent was sent a personalised email which contained general information about the study, instructions on how to access the online survey and a unique password to enter the survey. Up to four email reminders were

sent to participants who did not start the survey. Participants received no incentives of any kind. The study received approval by the Human Ethics Research Review Panel at Central Queensland University.

Study sample

A total of 1,646 respondents completed the survey and a further 204 respondents logged in to the survey without fully completing it. Of these, 197 cases were retained in the final data file as they include partial data. The final response rate for this AHSS study was 46.9% (n=1,843).

Data of survey respondents who reported to be employed in any type of paid work (n=1,073) were included in this study. Of the 1,073 employed respondents, those with a body mass index (BMI) above 50 kg/m² (n=10) and those reporting a health condition preventing them from decreasing their sitting-time (n=70) were excluded, leaving a total study sample of 993 adults.

Measures

Occupational sitting-time

The Workforce Sitting Questionnaire (WSQ) was used to measure sitting-time, this questionnaire assesses time spent sitting on a workday and a non-workday for the last seven days while (1) travelling to and from places; (2) at work; (3) watching TV; (4) using a computer at home; and (5) doing other leisure activities. Time spent sitting at work was computed as follows: [(average daily sitting-time at work on workdays x number of workdays) + (average daily sitting-time at work on non-workdays x number of non-workdays) /7] to get the average daily occupational sitting-time. The WSQ has acceptable reliability (ICC=0.63) and validity against objectively measured sitting-time at work (r=0.45) (Chau et al., 2011).

Work-related factors

Employment status, description of occupational tasks and occupational classification (see Table 1 for categories) described the current occupation of participants.

Socio-demographic factors

Country of birth, gender, age, highest educational level and combined household income were assessed using standard questions. There were 11 options ranging from 'no schooling' to 'tertiary studies/postgraduate' for educational level; these were dichotomized into low (no tertiary studies) and high (tertiary studies) education. The 16 answer options for combined household gross income ranging from 'negative/nil' to '≥$5000/week' were dichotomized into <$1,500 and ≥$1,500/week.

Health-related factors

General health (excellent, very good, good, fair, poor) (Ware et al., 1996; Kazis et al., 2004; Selim et al., 2009), weight and height were self-reported in the survey. BMI was calculated as follows: weight (kg) /height $(m)^2$. For the analyses, general health and BMI (weight status) were dichotomized into two categories (see Table 1). Physical activity (PA) was assessed using the Active Australia Survey (Brown et al., 2004a; Brown et al., 2004b). The variables on this survey were summed (adding time spent in walking and moderate activity and twice the time spent in vigorous activity) and dichotomized into two categories (see Table 1) (AIHW, 2003).

Psychosocial factors

Psychosocial items for PA used in adults (Kolt et al., 2013), derived from existing theories (Ajzen, 1991; Bandura, 1986), were adapted specifically for occupational sitting. Social norm towards sitting less at work (1 item), social support to sit less at work (1 item), self-efficacy about sitting less at work (2 items), control to sit less (1 item), advantages of sitting less at work (4 items), and disadvantages of sitting less at work (2 items) were assessed using a 5-point Likert scale (1: strongly disagree to 5: strongly agree). For advantages (cronbach's alpha=0.76) and disadvantages (cronbach's alpha=0.40), the average of the relevant individual items was calculated. Respondents rated how certain they were that they could sit less when at work (positive scale from 0-100). Intention to sit less at work was also assessed (no/ yes, within 1 month/ yes, within 6 months). See Table 1 for the question details.

Statistical analyses

All analyses were conducted using SPSS 20.0 for Windows and statistical significance was set at 0.05. Due to the skewed nature of occupational sitting-time, square root-transformations were used to improve normality, but for reasons of clarity, non-transformed average daily occupational sitting-time is reported.

In order to address the first aim, descriptive statistics were calculated for occupational sitting-time and independent samples t-tests or ANOVA's were conducted to compare means between several categories (see Table 1).

Consistent with the second aim, associations between socio-demographic, health-related, work-related and psychosocial factors (independent variables) and occupational sitting-time (outcome) were examined using linear regression analysis in a two-step process. First, a series of univariate regression models was used to examine associations between independent variables and the outcome, associations with $p<0.10$ were retained for further analyses (De Bourdeaudhuij and Sallis, 2002). In the second step, a hierarchical multiple linear regression analysis was conducted to examine the associations of the retained socio-demographic (block 1), health-related (block 2), work-related (block 3) and psychosocial (block 4) factors with occupational sitting-time. Multicollinearity between the remaining factors was examined prior to conducting the multivariable analysis.

For the third aim, moderated multiple regression analyses were conducted to examine whether the associations between correlates retained from the second aim and occupational sitting-time differed by work-related factors. Employment status and occupational classification were dichotomized based on differences present in occupational sitting-time (full- and part-time workers versus casual workers; white-collar and professionals workers versus blue-collar workers) which were also found in previous studies (van Uffelen et al., 2012; Duncan et al., 2010). For each moderator, separate controlled regression models were constructed with the interaction terms (moderator x correlate). Centered variables (raw minus mean data) were used to avoid high correlations between the main effects and the interaction terms and to reduce the effects of multicollinearity.

RESULTS

Participants

Mean age of the 993 respondents was 51.0 (SD=11.2) years and mean BMI was 27.2 (SD=5.2) kg/m². Further descriptive participant characteristics are presented in Table 1. Percentage of missing values was <15% for each variable, except for income (22.4%), occupational classification (22.7%) and employment status (32.6%). The multivariate regression analyses were conducted on a sample of at least 565 respondents.

Differences in occupational sitting-time between socio-demographic, health-related, work-related and psychosocial categories (Table 1)

On average, respondents sat for 3.75 (SD=2.45) hours/day during work. Full-time and part-time workers, those with mostly sedentary job tasks, white-collar and professional employees, men, those with higher education, those with a higher income (all p<0.001), and those who were insufficiently active (p=0.034) sat significantly more compared to the respective comparison categories (see Table 1). Participants with higher social norms and less control to reduce sitting, those finding it valuable, pleasant, healthy, relaxing (all p<0.001) to sit less, those disagreeing that sitting less is not beneficial at all (p=0.001), those disagreeing that sitting less is aggravating health problems (p=0.041), and those intending to sit less (p<0.001) reported higher occupational sitting-time compared to the respective comparison categories (see Table 1).

Associations of socio-demographic, health-related, work-related and psychosocial correlates with occupational sitting-time (Table 2)

The explained variance of the different models (blocks) is presented in Table 2. The full model showed that regarding the socio-demographic factors, being male (p=0.039), a lower age (p=0.008), a higher educational level (p=0.042) and a higher income (p=0.023) were associated with higher occupational sitting-time. Of the health-related factors only BMI was positively associated with occupational sitting-

time (p=0.016). For the work-related factors, those in part-time or full-time employment (p=0.010), those having sedentary occupational tasks (p<0.001), and those having a higher occupational classification (p=0.010) were more likely to have higher levels of occupational sitting-time. Of the eight psychosocial factors, only higher awareness of advantages of sitting less at work was associated with more occupational sitting-time (p=0.030).

Moderating effects of work-related factors (Table 3)

Employment status had a moderating effect on the association between control to sit less at work and occupational sitting-time (see Table 3 for coefficient of the interaction term). A lack of control to sit less at work was positively associated with occupational sitting-time among part- and full-time workers (B=0.644, SE=0.178; 95% CI=[0.294-0.994]; p<0.001), while there was no significant association among casual workers. Occupational classification was a moderator of the relationship between control to sit less and occupational sitting (see Table 3 for coefficient of the interaction term). Only among white-collar and professional workers, there was a positive association between a lack of control to sit less and occupational sitting-time (B=0.448, SE=0.163; 95%CI=[0.127-0.768]; p=0.006). No other moderating effects were found (see Table 3).

DISCUSSION

This study investigated the prevalence, correlates, and moderating effects of self-reported occupational sitting-time in Australian employees. Average occupational sitting-time was approximately 3.75 hours/day which is in line with previous studies using self-reported (Mummery et al., 2005; Aadahl et al., 2013) and objectively-measured occupational sitting (Brown et al., 2013), although a bit lower than in an Australian convenience sample(Chau et al., 2011)

The novelty of this study was the inclusion of psychosocial correlates of occupational sitting. Although psychosocial factors have been associated with other health behaviours (Heath et al., 2012; Barbosa

Filho et al., 2012), the association between these factors and occupational sitting-time has not been adequately explored previously. As such it has not been clear if these factors could explain occupational sitting and to which extent they should be targeted in interventions addressing occupational sitting behaviour (Rhodes et al., 2012). Overall, the results of the current study suggest that the psychosocial factors may not be strong determinants of occupational sitting. After controlling for other factors, the psychological factors were not significantly related to occupational sitting, and only explained 1.6% of the variance in occupational sitting. The automated and habitual nature of sitting may be an explanation for this low explained variance (Conroy et al., 2013). In contrast to our findings, PA studies have shown that modifying psychosocial constructs can alter PA behaviours (Heath et al., 2012), however more research is needed to confirm present observations in other populations. Furthermore, the majority of the present sample did mostly not agree with the psychosocial items, indicating that social norms, social support, self-efficacy, awareness of advantages, and intention to sit less were low in these respondents. Additionally, occupational sitting significantly differed according to some of the psychosocial correlates, showing that those perceiving higher social norms, those having less control to reduce sitting, those perceiving more benefits and those intending to sit less, reported more occupational sitting-time. This finding may be moderated by educational level, with the more educated more likely to have positive attitudes towards sitting less and more likely to be employed in jobs that require prolonged sitting (Duncan et al., 2013). To explore this further, future research will need to examine interactions between important socio-demographic and ecological and psychosocial factors. Intervention studies are needed to find out whether interventions focusing on psychosocial factors alone would be sufficient to promote behaviour change, or whether these factors are only important pre-conditions of behaviour change.

In addition, occupational sitting was compared between categories based on the socio-demographic, health-related, and work-related factors, providing similar results compared with previous findings on occupational and overall sitting (van Uffelen et al., 2012; Mummery et al., 2005; Bennie et al., 2013).

The highest level of sitting was reported by those being employed in mostly sedentary jobs which is in line with expectations. Higher levels of occupational sitting-time were also found among those with a higher socioeconomic position. This may be explained by the nature of the jobs performed by those people i.e. mostly sitting tasks (Duncan et al., 2013). Present findings are useful in order to select at-risk groups for future interventions aimed at reducing sitting at work.

With regards to the associations between the investigated correlates and occupational sitting-time, the multiple regression model explained a large amount (41%) of the variance in occupational sitting, comparable to proportions found for other SBs (Van Dyck et al., 2011). Present results indicate that most important contributors to occupational sitting were all work-related correlates, followed by socio-demographic correlates (gender, age, education, income) and one health-related factor (BMI), while the psychosocial correlates were of little influence.

Concerning the moderation analyses, hypotheses were not fully confirmed. Still, the positive association between perceived lack of control to sit less and occupational sitting was only found among part- and full-time workers, and among white-collar and professional workers. This association may be linked to job autonomy related to those job-types. Job resources, including personal autonomy, were also found to be predictive of regular exercise (Johansson et al., 1991). However, in a recent review (Lin et al., 2014) it was concluded that the evidence linking job control to PA or exercise were equivocal or weak among white-collar workers. Present findings suggest that having power to sit less at work may be an important aspect to address in future interventions for some groups; especially since one third of respondents reported to have little control to sit less at work. More information is needed on the cause of this perception. Future research needs to examine whether employees think they have no control or whether this is really the case? It should be investigated how job autonomy can be increased for certain employees and the potential role of the organizational level in increasing autonomy for individual employees should be further explored. Perhaps concerns about productivity

loss may also be of influence (Gilson et al. 2011). Moreover, different occupational groups perceived the risk of sitting differently (Gilson et al., 2012), indicating that interventions to change perceptions, or interventions that include a component focussing on changing perceptions, could be tailored to meet the specific needs of these occupational groups. Again more research is needed to confirm these interactions. Finally, intervention studies should examine whether increasing job autonomy leads to a change in occupational sitting.

As stated before, the major strength of this study is the inclusion of psychosocial factors of occupational sitting. The investigation of moderating effects of work-related factors is also an addition to the literature. This study also has some weaknesses. First, the cross-sectional design makes it impossible to determine causality of the investigated relationships. Second, all measures were self-reported and may be influenced by social desirability or recall bias. Although self-report measures are appropriate for large-scale surveillance (Bauman et al., 2006), the strength of the associations may have been underestimated. Third, percentages missing values were high for some variables, i.e. income, occupational classification and employment status, which may affect generalizability of results. In addition, most respondents were white-collar or professional workers, again limiting generalizability of findings. Fifth, this study focussed predominantly on individual and psychosocial correlates. Future studies should investigate the influence of other factors on occupational sitting, such as organizational/community, environmental, and policy factors (Owen et al., 2011). For example a recently developed instrument could assess the configuration of office environments (Duncan et al., 2013). In addition, other physical environmental aspects at work, such as the availability of sit-stand workstations or walking treadmill workstations, should be taken into account in future studies. Finally, the clinical significance and relevance may be limited here.

In summary, occupational sitting-time significantly differed by work-related, socio-demographic, health-related, and psychosocial factors in a sample of Australian employees. However, the most

important contributors of occupational sitting were the work-related and socio-demographic correlates. The majority of the investigated associations were not moderated by work-related factors. To conclude, this study helps to better understand occupational sitting, however more research is needed, especially on psychosocial factors and their influence on occupational sitting, to confirm present findings.

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

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Table 1: Descriptive characteristics and occupational sitting-time for work-related, socio-demographic, health-related and psychosocial factors.

	n (%)	Sitting at work mean (SD) hours/day
Work-related factors		
Employment status: n (%)		
Full-time worker[1]	242 (36.2)	4.29
Part-time worker[1]	339 (50.7)	(2.48)***
Casual worker	88 (13.2)	3.92 (2.24)
Occupational tasks: n (%)		2.87 (2.21)
Mostly sitting	645 (65.9)	
Other tasks (standing, walking, labour/physical work)	334 (34.1)	4.72 (2.09)***
Occupational classification: n (%)		1.83 (1.92)
White collar[2]	331 (43.1)	
Professional[2]	352 (45.8)	4.20
Blue collar	85 (11.1)	(2.35)***
Socio-demographic factors		3.89 (2.24)
Country of birth: n (%)		2.17 (2.52)
Australia	685 (79.3)	
Other	179 (20.7)	
Gender: n (%)		3.69 (2.53)
Men	402 (46.5)	3.96 (2.43)
Women	462 (53.3)	
Age: n (%)		4.13
18-39 years	125 (14.5)	(2.59)***
40-64 years	663 (76.7)	3.39 (2.27)
65-80 years	76 (8.8)	
Educational level: n (%)		3.88 (2.69)
Low (no tertiary studies)	310 (35.9)	3.78 (2.39)
High (tertiary studies)	554 (64.1)	3.22 (2.54)
Income: n (%)		
< $ 1,500 per week	265 (34.4)	3.11
≥ $ 1,500 per week	506 (65.6)	(2.50)***
Health-related factors		4.10 (2.35)
General health: n (%)		
Fair-poor	91 (9.2)	3.11
Excellent-good	902 (90.8)	(2.39)***
Weight status: n (%)		4.09 (2.33)
Healthy weight (BMI<25 kg/m²)	323 (37.6)	
Overweight - Obese (BMI ≥25 kg/m²)	535 (62.4)	
Physical activity (PA) level: n (%)		4.06 (2.85)
Insufficient PA (0-150 minutes of PA 5 days a week)	410 (41.3)	3.72 (2.41)
Sufficient PA (≥150 minutes of PA 5 days a week)	583 (58.7)	
Sedentary-specific psychosocial factors		3.53 (2.39)
Social norm[a]:		3.88 (2.48)
Most of the people who are important in my life would think I should sit less at work	170 (18.6)	3.92 (2.39)*
n (%) (strongly) agree	743 (81.4)	3.63 (2.48)
n (%) neither agree nor disagree, (strongly) disagree		

Social support[a]**:**		
I receive a great deal of support from the people closest to me in my efforts to sit less at work	111 (12.2)	
n (%) (strongly) agree	802 (87.8)	4.98 (2.46)***
n (%) neither agree nor disagree, (strongly) disagree		3.48 (2.37)
Self-efficacy:	329 (36.0)	
All things considered, if I wanted to I could easily sit less at work for the next month[a]	584 (64.0)	
n (%) (strongly) agree	38.1 (32.6)	4.00 (2.49)
n (%) neither agree nor disagree, (strongly) disagree		3.73 (2.45)
How certain are you that you could sit less when you are at work?(mean (SD)) [b]	311 (34.1)	
	602 (65.9)	3.94 (2.42)
Control to sit less[a]**:**		3.66 (2.48)
I have very little power over my ability to sit less at work.		
n (%) (strongly) agree	367 (40.2)	
n (%) neither agree nor disagree, (strongly) disagree	546 (59.8)	
Advantages of sitting less[a]**:**		4.16
For me to sit less at work is valuable.	293 (32.1)	(2.47)***
n (%) (strongly) agree	620 (67.9)	3.65 (2.43)
n (%) neither agree nor disagree, (strongly) disagree		
For me to sit less at work is pleasant.	612 (67.0)	
n (%) (strongly) agree	301 (33.0)	4.15
n (%) neither agree nor disagree, (strongly) disagree		(2.40)***
For me to sit less at work is healthy.	207 (22.7)	3.50 (2.47)
n (%) (strongly) agree	706 (77.3)	
n (%) neither agree nor disagree, (strongly) disagree		4.53
For me to sit less at work is relaxing.		(2.50)***
n (%) (strongly) agree	172 (18.8)	3.93 (2.35)
n (%) neither agree nor disagree, (strongly) disagree	741 (81.2)	
Disadvantages of sitting less[a]**:** % (strongly) agree		4.13
For me to sit less at work is not beneficial at all.	63 (6.9)	(2.46)***
n (%) (strongly) agree	850 (93.1)	3.01 (2.29)
n (%) neither agree nor disagree, (strongly) disagree		
For me to sit less at work would aggravate health problems.		4.46
n (%) (strongly) agree	649 (72.4)	(2.36)***
n (%) neither agree nor disagree, (strongly) disagree	247 (27.6)	3.55 (2.45)
Intention to change:		
Do you intend to sit less than you do now at work?		
n (%) no		3.22
n (%) yes, within 1-6 months		(2.54)***
		3.89 (2.43)
		3.25 (2.40)*
		3.80 (2.46)
		3.40
		(2.47)***
		4.60 (2.18)

[a] positively scored on a five-point scale (1-5) ranging from 'strongly disagree' to 'strongly agree'

[b] positively scored on a scale ranging from 0 to 100

min/d=minutes per day

SD=standard deviation
*p<0.05; ** p≤0.01; ***p≤0.001
[1] occupational sitting-time significantly differs from that in casual workers
[2] occupational sitting-time significantly differs from that in blue-collar workers
Study location: Australia; time data collection: 2012

Table 2: Associations of socio-demographic, health-related, work-related, and psychosocial factors with occupational sitting-time

	Univariate regressions	**Multiple regression model** (block 4)°		
Correlates	**B (SE)**	**B (SE)**	**95% CI for B**	**Standardized β**
Socio-demographic factors				
Country of birth (0=others, 1=Australia)	16.3 (12.3)	/	/	/
Gender (0=men, 1=women)	-45.6 (9.9)***	-0.767 (0.370)	[-1.494 , -0.040]*	-0.073
Age (continuous)	-0.8 (0.5)$^{\$}$	-0.043 (0.016)	[-0.075 , -0.011]**	-0.089
Educational level (0=no tertiary, 1=tertiary)	59.4 (10.2)***	0.881 (0.432)	[0.033 , 1.729]**	0.075
Income (0= <1,500$/week, 1=≥1,500$/week)	58.9 (10.7)***	0.913 (0.401)	[0.125 , 1.701]*	0.078
Health-related factors				
General health (0=fair-poor, 1=good-excellent)	-20.7 (16.7)	/	/	/
BMI (body mass index)	2.4 (1.0)*	0.094 (0.039)	[0.018 , 0.170]*	0.085
Physical activity level	-0.03 (0.01)**	-0.001 (0.000)	[-0.002 , 0.000]	-0.058
Work-related variables				
Employment status (0=casual, 1=part- & full-time)	72.4 (16.0)***	1.432 (0.552)	[0.347 , 2.516]**	0.089
Occupational tasks (0=sitting, 1=other)	-173.5 (8.5)***	-5.489 (0.446)	[-6.364 , -4.613]***	-0.464
Occupational classification	-111.9 (16.0)***	-2.079 (0.808)	[-3.665 , -0.492]**	-0.096
(0=white collar & professional, 1=blue collar)				
	45.8 (4.5)***	0.343 (0.197)	[-0.045 , 0.730]	0.064
	0.7 (5.9)	/	/	/
Psychosocial factors (continuous)	3.9 (4.4)	/	/	/
Social norm towards sitting less at work	0.4 (0.2)*	0.004 (0.006)	[-0.008 , 0.017]	0.026
Social support to sit less at work	14.6 (3.9)***	0.182 (0.160)	[-0.131 , 0.496]	0.042
Self-efficacy: sit less the next month at work	46.5 (6.8)***	0.673 (0.310)	[0.064 , 1.281]*	0.086
Self-efficacy: certainty to sit less at work	-34.6 (6.4)***	-0.040 (0.283)	[-0.596 , 0.516]	-0.006
Control to sit less	71.8 (10.7)***	0.137 (0.459)	[-0.764 , 1.038]	0.012
Advantages of sitting less at work				
Disadvantages of sitting less at work				
Intention to sit less at work (0=no, 1=yes)				

° Explained variance block 4= 40.9% (block 1= 7.4%; block 2= 10.8%; block 3= 39.3%)

SE: standard error; CI: confidence interval

/ not retained in multiple regression model
$^{\$}p<0.10$, *$p<0.05$; ** $p\leq0.010$; ***$p\leq0.001$
Study location: Australia; time data collection: 2012

Table 3: Moderating effects of work-related factors on association between correlates and occupational sitting-time

Correlates in multiple regression models[a]	Moderators (M)					
	Employment status (part- & full time / casual)		**Occupational task** (mostly sitting / other postures)		**Occupational classification** (white collar & professional / blue collar)	
	B (SE)	**95% CI for B**	**B (SE)**	**95% CI for B**	**B (SE)**	**95% CI for B**
Socio-demographic factors						
M x gender	0.742 (1.129)	[-1.476 , 2.959]	0.214 (0.836)	[-1.428 , 1.857]	2.803 (2.133)	[-1.387 , 6.993]
M x age	-0.040 (0.049)	[-0.136 , 0.056]	0.006 (0.035)	[-0.062 , 0.074]	-0.066 (0.062)	[-0.188 , 0.057]
M x educational level	-0.772 (1.158)	[-3.046 , 1.502]	0.289 (0.913)	[-1.504 , 2.081]	-0.534 (1.791)	[-4.052 , 2.985]
M x income	-1.517 (1.084)	[-3.645 , 0.611]	0.029 (0.842)	[-1.624 , 1.683]	0.406 (1.384)	[-2.312 , 3.125]
Health-related factors						
M x BMI (body mass index)	0.194 (0.104)	[-1.347 , 0.805]	-0.025 (0.084)	[-0.906 , 0.740]	0.084 (0.200)	[-0.309 , 0.478]
M x physical activity level	0.000 (0.002)	[-0.041 , 0.036]	0.000 (0.001)	[-0.001 , 0.051]	-0.001 (0.002)	[-0.004 , 0.003]
Psychosocial factors						
M x social norm towards sitting less at work	-0.271 (0.548)	[0.013 , 1.887]*	-0.083 (0.419)	[-1.189 , 0.091]	1.318 (0.821)	[-0.295 , 2.930]
M x self-efficacy: certainty to sit less at work	-0.003 (0.020)	[-1.472 , 2.710]	0.025 (0.013)	[-1.010 , 1.543]	0.043 (0.026)	[-0.007 , 0.093]
M x control to sit less	0.950 (0.477)	[-0.226 , 3.108]	-0.549 (0.326)	[-1.532 , 0.819]	-1.163 (0.549)	[-2.241 , -0.084]*
M x advantages of sitting less at work	0.619 (1.065)		0.267 (0.650)		-2.451 (1.536)	
M x disadvantages of sitting less at work	1.441 (0.849)		-0.356 (0.599)		-0.514 (1.185)	
M x intention to sit less at work	0.440 (1.581)		0.072 (1.117)		0.026 (3.556)	

		[-2.666 , 3.545]		[-2.121 , 2.266]		

[a] adjusted for socio-demographic, health-related and psychosocial factors
M: Moderator (employment status, occupational task or occupational classification)
SE: standard error
CI: confidence interval
*p<0.05
Study location: Australia; time data collection: 2012